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ORIGINAL ARTICLES.

PERICARDIAL EFFUSIONS.¹

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PERICARDIAL effusions have been selected for our consideration because so little has been written upon such an important subject. Text-books dismiss it with entirely too little attention. We shall not, owing to lack of time, dwell upon the three stages, but shall confine ourselves to the stage of effusion.

Pericarditis with effusion exists much more frequently than is generally supposed. In a conversation a few months since one of the ablest surgeons in the South stated to me that during a practice of nearly thirty years he did not remember ever having seen a case of pericarditis with effusion. Such a statement coming from so able a source naturally makes me ask the question: Is it possible that it does frequently exist and is not recognized? Pericardial effusions may be serofibrinous, hemorrhagic, or purulent, all of which types the writer has seen in his out-clinic at the Memphis Hospital Medical College and in his ward service at the St. Joseph's Hospital. It may seem dogmatic to some when the essayist makes the statement that the physical signs and symptoms of a pericardial effusion are just as characteristic and just as easy of recognition as the physical signs and symptoms of a pleuritic effusion. The two conditions are frequently confused, because the physician has either been careless in his examination of the patient, or because he has not properly applied the great fundamental principles of physical signs.

Now let us dwell briefly upon the physical signs of pericardial effusions. By inspection we learn much. We notice in a great many cases that the apex beat is not visible, that the patient is suffering with pronounced dyspnea. This dyspnea is more marked in pericardial effusions than in any other affection. Cyanosis is marked in some cases, in others it is absent. As to what we shall find by inspecting the cardiac region depends entirely upon the degree of the effusion. Where the effusion is beginning to form, we often notice tumultuous action of the heart, a forcible apex beat, but when the effusion is large, in my experience, it is a difficult matter to locate an apex beat by the application of any of the physical signs. By palpation we find the apex beat is absent when the effusion is marked, that there is no cardiac impulse to the palpating hand, that the pulse is rapid and feeble. Percussion and auscultation are the two great phys-

ical signs upon which we must depend in making a diagnosis, just as we would in a pleuritic effusion. The area of *flatness* on percussion in pericarditis with effusion is characteristic.

I use the term *flatness* with emphasis and advisedly. I wish to call your especial attention to the careless, indiscriminate and unscientific application of the term *flatness* as a synonym of *dulness*. Flatness and dulness have nothing in common. There is as much difference between them as there is between a tenor note and a soprano note. Yet, in a careful reading of all the best books on physical diagnosis and practice of medicine, you will find the terms flatness and dulness used interchangeably. A fluid medium will not yield dulness on percussion, but flatness. You may fill any vessel with any kind of fluid and exclude the air, be that vessel metal-like or wooden, and by percussing the walls of the containing vessel you will get a flat note. On percussing the heart, where there is a well-marked pericardial effusion, we elicit a flat note triangular in shape with the base downward and the apex upward.

Rotch, of Boston, and Ebstein, of Germany, have called attention to a phenomenon which I have found a valuable aid in arriving at a proper diagnosis. I refer to *flatness on percussion in the fifth interspace to the right of the sternum*. Upon auscultation we shall find that the heart sounds are distant, muffled or absent, according to the quantity and quality of the fluid, and the state of the valves and the condition of the cardiac muscle. In many cases I have found the heart sound absent, in others the to-and-fro friction rub at the base, and upon several occasions I have detected a blowing mitral systolic murmur at the apex. This triangular flatness on percussion is the safest of all the physical signs in arriving at a diagnosis. It matters not what may be the evidence by auscultation and palpation. To confuse a pericardial effusion with a pleuritic effusion is inexcusable, provided the physician has carefully applied his physical signs and has properly interpreted their significance. Yet the mistake is frequently made. I have seen two such instances during the last six months. In pleuritic effusions on the left side there will, in nearly every case, be displacement of the heart and apex beat to the right, the displacement, of course, depending upon the degree of the effusion. The apex beat in pleuritic effusions on the left side can always be seen and felt. In pericardial effusions, on the other hand, if there be cardiac displacement it will not be to the right as in pleuritic effusions, but, in my experience, upward.

In the pericardial effusions in the great ma-

¹ Read by invitation before the Arkansas State Medical Association, Little Rock, May 16, 1905.

jority of cases the apex beat can neither be felt nor seen.

As I stated in the outset of my paper, time will not permit discussing the three stages of pericarditis, suffice it to say that very often, at the stage when the effusion is becoming manifest, the heart action is tumultuous and apex beat is forcible, the heart sounds are accentuated, the pericardial friction rub is often heard. It is therefore well in any case of pericarditis, it matters not what the cause may be, to watch carefully for the development of an effusion just as you would in a simple case of pleurisy. In pleuritic effusions the area of the distribution of flatness on percussion has but little in common with that of a pericardial effusion.

In pleuritic effusions the flatness is marked over the area of the fluid, namely, laterally, anteriorly and posteriorly. In pericardial effusions, on the other hand, the area of flatness is over the cardiac region, is triangular in shape, with the base downward and the apex upward. Upon auscultation in pleuritic effusions there is in the majority of cases absence of voice sounds and absence of the respiratory murmur. In pericardial effusions the respiratory sound is clear and distinct posteriorly and laterally.

Bamberger has called attention to an area of tubular breathing at the angle of the scapula in some cases of pericardial adhesions and in pericardial effusions. I do not attach much importance to this sign, as there are too many others which are more significant and more reliable.

Since November 1, 1904, the writer has seen ten cases of pericarditis with effusion in his ward service at the St. Joseph's Hospital and in his out-clinic at the Memphis Hospital Medical College. All of the patients were male. Nine were negroes, the youngest a negro boy twenty years of age, the oldest a white man forty-two years of age. Clinically, two were the results of a pericarditis accompanying and following lobar pneumonia. Three were tuberculous. Two were found following acute inflammatory rheumatism, and three were traceable to the poison of grippe. The diagnosis in each case was verified by the aspirating needle. Three of the series are of interest:

On November 1, a white man, aged forty-two years, single, occupation a machinist, was admitted to my wards at St. Joseph's Hospital, suffering with lobar pneumonia at the base of the left lung. He admitted having had syphilis several years since and having spent some time at Hot Springs. He was addicted to drink and had been on a spree several days previous to his sudden attack of pneumonia. A general arteriosclerosis was present. Upon a physical examination I found in addition to the lobar pneumonia a pronounced pericarditis. The pericardial friction sound was quite characteristic and classic. Dyspnea was great. On palpation the heart action was tumultuous and irregular. I instructed the interne to watch him carefully with reference to a developing pericardial effusion.

The pneumonia was delayed. Convalescence was long drawn out. The physical signs of pericardial effusion became more marked each day in spite of all therapeutic measures. Gradually the apex beat was seen to be less tumultuous, and at the end of the second week it could neither be seen nor felt. The dyspnea became distressing. Auscultation and percussion were resorted to daily. Upon auscultation the heart sounds gradually became more distant until they could not be heard at all. The dull note on percussion over the cardiac region and over the lung gradually gave way to flatness over the cardiac region and to a hyperresonant note over the lung. I aspirated in the fourth interspace near the left border of the sternum, and withdrew an ordinary hypodermic syringe of a serofibrinous fluid. I immediately sent him to the surgical ward, and Dr. E. E. Francis, who was on surgical duty, aspirated him with a Potain aspirator and withdrew six ounces of fluid. (I have no time nor patience with the metric system of measurements. It does nothing but confuse the American doctors. France and Germany may have it if they want it, but the old way is good enough for me.) His dyspnea immediately disappeared, the operation was performed at 10 A.M. He fell into a quiet sleep, and slept the remainder of the day and nearly all night following. The heart sounds became distinct. The flatness over the cardiac region disappeared. This relief, however, was only temporary, for all the previous symptoms and signs began to develop again, and on the seventh day after Dr. Francis' aspiration he was operated upon the second time by Dr. Francis, and about the same quantity of fluid was withdrawn. The patient remained in the hospital two weeks after the second aspiration, gaining in strength each day. All of the symptoms and signs of pneumonia and pericarditis with effusion disappeared. He left the hospital to all appearances well.

On March 1, a colored man, aged twenty-three years, came to my clinic at the Memphis Hospital Medical College. He presented his clinical card, showing that he was first seen at the clinic June 3, 1904. Upon looking up his record I saw that the diagnosis at that time was pleuritic effusion on the right side. The records showed that he had had pneumonia in the right lung in April, prior to his first visit in June, 1904. The records also showed that he had been sent to the City Hospital for surgical relief of pleuritic effusion. The hospital records showed that he had been aspirated and had remained in the hospital three weeks and had been discharged. When he came to the clinic on March 1, he had all the classic signs of pericardial effusion, namely, the pronounced dyspnea, the absence of the apex beat by inspection and palpation, the triangular flatness on percussion, the flatness in the fifth interspace to the right of the sternum (Roth's signs), absence of heart sounds on auscultation.

He had no temperature, pulse was 140 and hardly perceptible at the radials. Extremities

were cold. I aspirated him before my class in physical diagnosis with an ordinary hypodermic syringe, and withdrew a syringeful of pus. I sent him to the City Hospital and referred him to Drs. John M. Maury and M. Goltman, who were on surgical duty. Drs. Maury, Goltman and myself aspirated him some six or eight times after his arrival at the hospital, but we failed again to find pus. He died one week after he had been admitted to the hospital. A post mortem was held by Dr. George Livermore, Pathologist to the City Hospital. There was tuberculosis of lungs, pleura and mediastinum, with universal adhesions. Upon opening the pericardium about a pint of pus was evacuated. Evidently this was a clear case of tuberculous pericarditis.

On May 8, a colored boy, aged twenty years, came to the clinic. His history was vague. He stated that he had never been sick until about three weeks prior to his coming to the clinic, at which time he was attacked with a chill and headache, followed by nausea and vomiting. He had had a continued type of fever since the initial chill. He stated that he felt well and had not been compelled to take his bed, and that he wanted advice about his abdomen swelling. Upon examining his abdomen I found a well-developed ascites. He had a temperature of $102\frac{3}{4}^{\circ}$ F., pulse 110, and good volume. Upon examining his chest, as is my custom in nearly all my clinics, to my great surprise I found many physical signs of a pericardial effusion.

By inspection and palpation the apex beat could not be found. On percussion the characteristic triangular flatness was present, also the flatness in the fifth interspace to the right of the sternum (Rotch's sign). On auscultation the heart sounds were distant. At the base a classic to-and-fro pericardial friction rub could be heard. He had no cough. Physical signs with reference to the lungs were negative. The most remarkable feature about this case was the absence of dyspnea. There were enough physical signs of pericardial effusion present to justify an aspiration. I withdrew a syringeful of serofibrinous fluid. Clinically I think we can class this as a case of tuberculous pericarditis and tuberculous peritonitis as evidenced by the ascites. I could make out no enlargement of the liver, and in nearly all cases of pericardial effusion the liver is enormously engorged and enlarged. I still have this patient under observation. Dr. McElroy, of Memphis, is making reports on the blood and urinary findings.

In conclusion let us recapitulate and accentuate some facts: (1) Do not confuse a flat note on percussion with a dull note. (2) In all cases of suspected pericarditis watch carefully with reference to the developing effusions. (3) Apply the physical signs carefully and cautiously, thereby saving yourself the embarrassment of confusing pericardial effusions with pleuritic effusions.

ANTITOXIN FOR POISONOUS MUSHROOM INTOXICATION: A PRELIMINARY COMMUNICATION.¹

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SINCE Kobert's investigations in 1891 upon the nature of the toxins of *Amanita phalloides* and *Helvella esculenta*, no contributions of value have appeared in the literature. Kobert¹ showed that the extract of both these fungi was strongly hemolytic for the erythrocytes of a very large number of mammals, and attributed their toxic action to their blood-laking property. To this substance, previously known as Phalloidin, Kobert gave the name *Phallin*. Two years later Seibert,² working in Kunkel's laboratory, attempted to disprove Kobert's conclusions, and in 1897, Claisse,³ in Lyon, attacked the question from the standpoint of serum therapy. The specimens of fungi which Seibert employed were inaccurately identified and he failed to demonstrate any hemolytic properties in extracts from them. Claisse succeeded in obtaining a toxin which would kill small animals when injected subcutaneously, but failed to demonstrate any antitoxic action in the serum of the animals experimented upon, although he apparently succeeded in immunizing rabbits so that they would resist otherwise fatal doses.

The number of deaths from the consumption of poisonous fungi is by no means small, and the cases of non-fatal poisoning are quite numerous. Fatal cases have been reported by Carayon,⁴ Michel,⁵ Oré,⁶ Plowright,⁷ Trask,⁸ Schröter⁹ and a number of others, and in 1884, Stücker Sahli and Schärer collected the previously reported cases, to which they added several of their own, in which the nature of the fungi eaten, the symptoms during life, and the post-mortem findings were all carefully investigated. The chief symptoms were the profound prostration with cyanosis, headache, vomiting and diarrhea, and the principal lesions post-mortem were extensive ecchymoses and hemorrhages in the serous membranes and parenchymatous organs, together with profound fatty degeneration in liver and kidney.

In the literature since 1884, I have been able to find a number of fatal cases, and there are probably well over a hundred such on record.

Poisoning may occur from the consumption of a number of fungi, including *Amanita phalloides* or the "Deadly Amanita," *Amanita muscaria* or the "Fly Agaric," and certain varieties of *Boletus*, especially the ones known as *Boletus satanas* or *Boletus luridus*.

The cases of poisoning by species of *Boletus* are exceedingly rare and little is known of them. Those following the consumption of *Amanita muscaria* are practically never fatal, the symptoms here being due to the profound action upon the heart of the muscarine contained in large

¹From the Bacteriological Laboratory, Johns Hopkins Medical School. Received for publication August 4, 1905.

quantities in the fibers of *Amanita muscaria*, for which atropine is a physiological antidote.

The fatal cases practically always follow the eating of the *White* or *Deadly Amanita*, and the mortality among individuals consuming them is very large, considerably over 60 per cent. Death has, in fact, occurred from eating a single plant. In America, where fungi are but little used as articles of diet, few cases of poisoning occur, but in Russia, Germany, Italy, France and Japan, where these substances are eaten by the peasant class in large quantities, the number of deaths following the use of the poisonous varieties is quite large, and it is a matter of both theoretical and practical interest to understand the nature of the poisons involved, and to determine whether efficient antidotes can be prepared for them.

The *Amanita phalloides* grows abundantly in the woods in the vicinity of Baltimore, but is especially common in the Blue Ridge Mountains of the Carolinas, Pennsylvania, and Maryland. For several years I have been in the habit of collecting them during the summer months, and have thus been able to obtain a satisfactory supply of material with which to work.

The fungi were dried in the sun and an extract made later by macerating them in water, expressing them between folds of linen cloth, filtering through ordinary filter paper, then through a Berkefeld filter under pressure. As thus prepared the extract is a thin, dark brown fluid which may be kept almost indefinitely without losing its toxic properties. The toxic principle contained in this extract, known since Kobert's time as Phallin, is strongly hemolytic. When brought to isotonic solution by the addition of requisite amounts of NaCl it quickly dissolves the erythrocytes of man, cattle, swine, sheep, goats, rabbits, dogs, guinea-pigs, hens and pigeons. Heated to 65° C. it loses this property completely, and the capacity of dissolving the corpuscles is not restored by the addition of serum, lecithin, cholesterin, milk, or any other substance which has thus far been tried. The hemolytic principle thus belongs to the category of bacterial hemolysins, and not to the serum hemolysins.

This extract is very poisonous to small animals. Following the injection of fatal quantities subcutaneously, there is in both rabbits and guinea-pigs an extensive subcutaneous edema with hemorrhages in the lymphatic glands, in the serous membrane, and in the internal organs, especially the liver and kidney. The heart always stops in diastole, and the blood may be fluid if the dose has been large. Death occurs usually within four or five days, although it may occur after the lapse of two or three weeks, owing probably to degenerative changes in the liver and kidney.

If rabbits be treated with repeated small doses of Phallin subcutaneously, followed by large doses intraperitoneally, it is possible to immunize

them against the action of multiple toxic doses. The mortality among animals so treated is very great, but successful results have been thus far obtained with five or six rabbits. These animals were eventually able to withstand the injection of about five times a fatal dose and their blood serum exhibited definite antihemolytic and antitoxic properties.

The strongest serum thus obtained will neutralize the hemolytic principle of Phallin in a dilution of 1-10,000, using as an index of hemolysis the quantity of Phallin just sufficient to dissolve one cubic centimeter of a 5 per cent. solution of rabbit's blood. The same serum possesses antitoxic properties in a dilution of 1-10, $\frac{1}{2}$ cubic centimeter completely neutralizing five times the fatal dose for rabbits.

A goat is now being immunized, with which it is hoped to obtain a more efficient antitoxin, but in view of certain unavoidable interruptions to the work, it was deemed advisable to publish the results thus far obtained.

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THE DIAGNOSIS AND TREATMENT OF ANEMIA.¹

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ANEMIA is one of the most frequent terms on the lips of the physician. It is one of the most frequent conditions with which we are called upon to deal, either as general practitioners, as gynecologists, surgeons, ophthalmologists, dermatologists—in short, there is no branch of medical work in which the condition of anemia does not frequently occur, either as a primary essential disease or as an important symptom or complication. Prognosis is largely involved in its absence or relief, and by no means uncommonly. Anemia, which may develop as but a secondary manifestation in any medical state, may grow to be the most dominant feature of that case; very often in this respect does the "tail wag the dog."

Recognizing, as we all do, the great prevalence and importance of this subject, I doubt very much if any of us are prepared, offhand, to put into words just what we mean by the term anemia. Three years ago I put this question to myself, and since this time I have been giving the condition special study in the hospital, private practice, laboratory and dead house. I feel that I am now much less able to define the condition accurately than I considered myself

¹ Read before the Erie County Medical Society, June 6, 1909.

to be when I first became particularly interested in the anemias; nevertheless, the condition as generally understood is a fairly definite one, and just now I feel that our tendencies are too much in the direction of the arrangement of many subdivisions and in the creation of ill-defined and indefinite classifications, which are not justified by close study of the condition, considered in the broadest light from all aspects of the disease. Too close adherence to observation of clinical forms only leads one astray through the multiplicity of the symptoms and signs of the condition. An attempt at classification or study from purely laboratory findings, without reference to history and clinical manifestations, leads one even more widely afield, hence I believe that for a correct consideration of anemia we must apply both clinical and laboratory investigations, and by a discriminating study of the total evidence, finally arrive at what may be looked upon as a fair and impartial verdict.

Perhaps it is well at this time to attempt to define in a rough sort of way what I do understand by anemia: Anemia is a condition of the blood characterized by deficiency in the total or relative amount of hemoglobin, or it may be a condition of the body resulting from an insufficient absorption from the blood of nourishment for the proper support and oxygenation of the body tissues. Accepting this imperfect definition as our basis, it appears that there are cases, and as a matter of fact we occasionally meet with them, in which no discoverable defect in the blood can be found, but in which the disease seems to be localized in the inability of the tissues to properly absorb the substances contained in the blood. Of course this definition is subject to the greatest modification and correction, for, as yet, we know but very little of the obviously important chemistry of the blood, and what we may now consider a normal blood may be deficient in the most important of chemical requisites. Study of the blood and of the patient cannot fail, however, to demonstrate in a certain number of cases the inadequacy of the usual definition, of deficiency in corpuscular elements and hemoglobin only. There can be no question but that certain individuals require less corpuscles and less hemoglobin than others of the same body-weight, just as some persons thrive best on what would be a very insufficient diet for others. The important point which I wish to make here is that we must not judge entirely of the presence or absence of anemia by the volume and condition of the blood alone, but also by the function of the tissues which are dependent on the blood for their well-being. Thus 85 per cent. of hemoglobin, with, let us say, 4,000,000 red corpuscles, may be normal for one individual in apparently perfect health, and yet another person of the same body-weight with this condition may suffer to a considerable degree from anemia.

The purpose of this paper is to direct your

careful attention to anemia as it comes under your charge, and to bespeak for these cases the same care in diagnosis and the same earnestness of treatment which you would give to, let us say, an indefinite neurological condition or to the treatment of a case of cardiac disease or typhoid fever.

For one to attempt to give this amount of study to every case of anemia in his practice would be perhaps impossible, and in my opinion much time would be wasted and taken from more valuable work; what I do wish is that you devote to those obscure and intractable cases which resist the ordinary measures of treatment this study; in other words, when you find a case manifestly suffering from hemie malnutrition, but in which little or no response to the ordinary treatment results, to these cases be given the time and considerable study which is often necessary for the proper understanding and treatment of these by no means rare conditions of anemia.

In regard to methods, it is quite obvious, in the selection of methods for study, that simplicity and quickness are desiderata of the greatest importance; and, in so far as possible, methods requiring a minimum of special technical skill are required, particularly as regards laboratory technic, for the reason that the busy practitioner who uses these methods but infrequently cannot retain the skill in the manipulation of these instruments which he probably possessed at the time of his graduation. For this reason, in my presentation and discussion of methods I shall consider only what I have found to be most reliable, most simple and in general the best available methods, which yield the most valuable results with the least expenditure of special technical skill.

As I have before stated, I insist on a combination of the methods of the laboratory and the clinic; of the two, there is no doubt in my mind but that clinical examination, though incomplete and often misleading, is the more valuable. A laboratory finding without the best of clinical study is, I may almost say, generally misleading.

In the history of the case, we should go carefully into the family history, particularly as to the existence of previous blood disorders in the family, the presence of hemophilia, of frequent epistaxis, of menorrhagia or of occupations tending to deplete the hemic state, such as lead working, conditions leading to pneumoconiosis and the like. There are families in which anemic states, particularly hemophilic and chlorotic tendencies, are undoubtedly inherited.

Occupation and personal history are to be gone into thoroughly. Mercury and lead workers, for example, may have their condition at once explained. Though lead may have long since disappeared from the urine together with all clinical manifestations of lead poisoning, yet I have known the anemia with its typical degeneration of the red corpuscles to persist for as

long as fifteen years after the acute poisoning. Habitat is to be considered with the possibility of unhygienic surroundings; hookworm infection or malaria, with their consequent anemia, which may exist without the slightest temperature variations, are all to be considered. These are but instances illustrating the great importance of a careful consideration of the personal history in every respect. Inquiry as to the habits of life, as to food, exercise and exposure to the sunlight and air; as to sleep, use of alcoholics and tobacco or other drugs; all these must be taken into account. In brief, there are no details in regard to the history of a case of anemia which may not be profitably considered in our attempt to secure a comprehensive understanding of any instance of it.

In ascertaining the symptoms complained of, I have usually found it most satisfactory first to allow the patient to state of what he complains chiefly, and the reasons for which he was led to consult a doctor. After these have been stated, each of the systems are to be gone over, questioning as to the functional ability of the various organs. Particularly, stress is properly laid on the menstrual function in women, for the reason that menorrhagia may be either a causative factor or a symptomatic manifestation of the anemia; on the other hand, amenorrhea may be the result, though, I believe, never the cause. In the symptomatology of anemia it is often difficult not to ask leading questions which may act suggestively and cause the patient unwittingly to mislead you; with most cases their own story is sufficient, with an occasional hint from the physician—this of course only with patients of intelligence. With hospital cases I often find a symptomatic history useless or wholly misleading.

The physical examination should always begin with a careful inspection of the patient, particularly of the skin and the mucous membranes of the lips, nose and mouth; nevertheless I think that there is nothing perhaps so misleading as the data sometimes secured by this inspection, and one should constantly bear in mind that though usually a pale and lusterless skin and mucous membranes is more or less characteristic of anemia, it is not invariably so. Those of you who have been thrown in contact with residents in the tropics have often noted that the pale skin, usually dark and muddy, which we see in these patients, is in nowise indicative of anemia. This lesion, which is very common in the tropics, takes place in those of temperate climes who have been in the tropics for only a short time. I have often observed it, particularly in the wives of army officers on their return from the Philippines. It is also not infrequently present in people of this climate, and I have often been surprised to find a practically normal blood condition in cases of this nature. Of course the symptoms and most of the other signs of anemia are wanting in

these instances, but it cannot be absolutely excluded except by blood examination. Reliance should never be placed on the coloration, particularly of the cheeks, since these are so prone to marked vasomotor alterations; inspection of the color of the ear is much more reliable, though also subject to the same variations. In anemia of some time standing the hair and nails show degenerative alterations, due directly to defective nutrition. As has been long noted, the amount of subcutaneous fat, particularly in the more severe primary anemias, is often not diminished, though in other instances loss of weight and emaciation are cardinal indications. Ophthalmoscopic examinations are often a matter of considerable import in the diagnosis of anemia, particularly since its findings not infrequently indicate the probable cause, as in nephritic conditions, or shows the hemorrhages so common in pernicious cases.

Palpation, particularly to ascertain as to lymphatic, hepatic or splenic enlargement should not be neglected, since one may easily mistake a leucemia for a simple anemia. History and examination as to the possible presence of new growths must always be considered. Tenderness of the bones as occurring in myeloma, rickets or osteomalacia is to be searched for and excluded. Localized or general edemas, which are frequent symptoms of anemia, are to be looked for. Examination of the lungs, considering the possibility of tuberculous, neoplastic or fibroid involvement, is also advisable.

Perhaps no one system yields more definite data than the cardiovascular organs. In anemia of severe degree we commonly find the pulse soft and compressible, and the vessels often give the impression of being incompletely filled. Bruit may be heard over the larger veins and arteries, just as anemic murmurs are heard over the heart in the same condition. The heart action is often irregular, intermittence is common and the muscle sounds are weak and without tone. On the contrary, occasionally a high tension pulse is present associated with overheart action; as a rule, in these instances I have found the renal functions also at fault. In this particular, I have found anemia so frequently dependent on kidney disease that I now make a rule to test the blood pressure and to examine carefully the urine in every anemic case. A suspicion of renal disease is often given by the sphygmomanometer while no indications of kidney disease are shown in the urine. When the anemia is of renal origin you will almost invariably find a high blood pressure, whereas, when it is unassociated with renal disease as a rule the blood pressure is low. The manipulation of the blood pressure apparatus is now so simple that it should be part of the regular equipment of every hospital and physician's office. In my experience, only two relatively inexpensive instruments are to be relied upon, the Riva-Rocci and the Janeway; the latter I

have used very extensively and with excellent results. Its operation is so simple that the blood-pressure charts in the New York City Hospital, where a great deal of this work is being done, are kept by the nurses.

In the general examination of the patient, the gastro-intestinal tract should by no means be neglected. Anemia resulting from malassimilation is one of the most frequent types, and you will all agree with me that in the treatment of the anemias so common in girls and young women in particular the relief of constipation is one of the most evident steps toward cure; the more frequently we attend carefully to the intestinal function the less commonly do we find true and idiopathic "chlorosis." Dilatation of the stomach and atrophic gastritis are common conditions as the causative factors in anemia, and oftentimes examination of the gastric contents gives us the essential clue; often, close attention addressed to this tract will discover the presence of a new growth, of pyloric stenosis with obstruction, or of some other sufficient explanatory lesion. Examination of the feces should never be neglected, since in a large and increasing number of diseases manifested by fecal findings we find anemia developing, often as a fatal process. Blood and blood pigment are found in large quantities in hemorrhages from the gut, while the ovæ of the hookworm, of the *Bothriocephalus* and even of ordinary tinea may be found and fully account for what may have been previously a most puzzling condition. Even so simple a condition as hemorrhoids is stated by Lazarus to be at times causative of anemia. Of late I have, in addition, been making a systematic examination of the feces as to the amounts of iron passing, in any particular state. Since the absolute determination of iron in the feces is a difficult and tedious matter, I have made relative tests at stated intervals with the patient, of course, on a stated and definite diet. Thus I take a measured amount of feces, digest it in a test tube with a definite amount of dilute HCl, and then by the addition of potassium ferrocyanide in definite amounts to the filtered fluid one is able to determine approximately by the density of precipitate of Prussian blue the amount of unabsorbed iron lost in the feces. This test is, of course, merely relative and very rough, but I have found it to yield very instructive results in a good many cases. Even the mere inspection of the feces is valuable, for in case blood in considerable amount is escaping from the upper intestinal tract, the dark green or black feces (due to sulphide of iron) show this to be a fact, whereas in case the blood escapes from the colon, it is much more apt to be found freshly fluid or in clots; the larger intestinal parasites may also be found in this manner.

Even examination of the central nervous organs may sometimes yield important data, thus in primary pernicious anemia degeneration

of the spinal cord, particularly of the posterior tracts, takes place, and spinal signs and symptoms like those of tabes may be found. In certain syphilitic diseases of the central nervous system extensive degenerative lesions may also be found in the blood; in lead poisoning, with its often profound and serious anemia, lead palsies may put us on the right track.

Perhaps, to be brief, we should say that in obscure cases of anemia a careful and complete examination of the entire body should be made; the more thorough and complete the examination, the less frequently will instances of primary idiopathic anemia occur, and the more commonly will you find success attending your treatment of these often obscure diseases which so commonly result from or cause anemia of severe degree.

It seems almost too much to add to the duties of the already overtaxed physician, particularly those in general practice, but I think that very few of us nowadays feel that we are prepared to enter the field of diagnosis without a certain amount of laboratory training and equipment; this is particularly desirable when we are dealing with anemia in any of its forms. Yet the necessary equipment and technical requirements are not great; a complete blood examination, sufficient for most practical purposes, can be made in from thirty minutes to an hour. Nevertheless, understanding, as I think I do, the numerous demands on the time and skill of the average physician, I have attempted to give in this brief paper a consideration of only the most important and simple laboratory methods as applied to the study of anemia.

In the first place, I consider by far the most important instrument to be used in the study of the anemias to be the hemoglobinometer. One is now no more excused in neglecting its use in cases of blood disease, particularly as a means of recording progress under treatment, than he is excused from the use of the clinical thermometer. It requires less time than is needed for the thermometer, and its findings in any anemic state are just as valuable as those of the thermometer are in the various febrile conditions. The chief objection to its frequent use can only be the primary cost of the instrument. I do not consider the use of the Talqvist filter paper test as of much value, even relatively, since its error is within 10 to 15 per cent., and its use requires fully as much technical skill as is demanded in the use of an accurate instrument. The modified Fleischl hemoglobinometer is a very accurate one, but it is cumbersome, very expensive, and out of expert hands inaccurate; furthermore, it is inconvenient to use at the bedside or outside of a well-equipped laboratory or office, and its employment takes from five to fifteen minutes. On the contrary, the instrument designed by Dr. Dare, of Philadelphia, is convenient, simple, accurate, and can be carried in the coat pocket; a test can be made

with it in from thirty to sixty seconds. The Sahli instrument is also good; it is convenient, cheaper, but not so quick. I recommend the Dare beyond all others for the general practitioner for many reasons which I need not mention, but particularly since it fills the bill in the two most important requisites,—accuracy and speed. Next to careful clinical study the hemoglobinometer affords the most important data for the proper understanding of the anemias. By its use you are able to exclude the cases of pseudo-anemia, in which the condition of pallor is caused by vasomotor or dermal conditions; you are also able to note at any time the progress or loss in a case, and to put it in definite and accurate terms.

After the use of the hemoglobinometer, I should next insist on the employment of the microscope. Often the mere glance at a drop of fresh blood allowed to spread between a clean cover-slip and an ordinary microscopic slide will show you all you wish to know. The presence of malarial plasmodia, the character of the red cells, whether they are deformed, degenerated or whether of abnormal types, as normoblasts, megaloblasts or other foreign elements are present, can be easily ascertained. The various filarial diseases can be discovered only by this method; in short, I know of no more satisfactory way in which the physician can spend from five to fifteen minutes of his time than in this simple examination. The formation of fibrin about the edges of the cover-glass is to be noted; the arrangement of cells in rouleau and to a certain extent the nature of the serum can also be determined. As supplementary to this, is the examination of smears of blood thinly spread over the surface of a slide and stained by various methods. The degenerative alterations seen in the blood become more apparent by this method, malarial plasmodia are more certainly identified and the recognition of megaloblasts, normoblasts or variation in the size, shape and character of the red cells and leucocytes becomes simple. The methods now employed for this purpose are simple, and are given in detail in all text-books. They are very numerous, but I would advise you to select a single method of staining, preferably with one of the numerous polychrome methylene blue preparations and to stick to that, and, unless you are doing a great deal of this work, you will secure more certain and satisfactory results by the use of a single method of staining with which you may become skilled and familiar. Jenner's stain, the Leischmann method, Goldhorn's preparation—all of them are good and give practically the same results; all that is required to give either of them certainty and accuracy is a fair amount of practice. Much beside the simple condition of the red cells is to be determined from such a specimen. The regularity or irregularity of hemoglobin staining is to be noted and the manner of degeneration of the red blood cells.

These, taken with previous examination of the patient, for these studies should never be conducted except in conjunction with the clinical work, give data of the most absolute and valuable character, not only as to the variety and degree of the anemia, but also not infrequently as to its cause.

Perhaps one of the most significant facts which can be elicited by the examination of the stained smears is in the differential count of the leucocytes. This requires some time, but in selected cases it well repays the time expended. Thus a relative increase in the eosinophile cells leads one to consider parasitic disease, such as trichinosis, or perhaps some disorder of the bone marrow, as myeloma or osteomyelitis. Relative increase of the mononuclear cells is found in typhoid even before the Widal test develops. Increase of the lymphocytes may indicate a leucemia and a relatively great increase in the polynuclear cells is most commonly indicative of inflammatory disease. I should, however, like to enter a caution at this point; leucocytosis, that is, an actual increase in the number of leucocytes, cannot be satisfactorily determined without an actual blood count; it may be suspected and even determined in a few cases with some accuracy in this examination of the smear, but I cannot recommend the method for this purpose, principally for the reason that the determination of the presence or absence of leucocytosis is often of the greatest surgical importance and should always rest only on the most absolute data possible.

Next in the laboratory equipment is the blood counter. Its use does require a certain amount of technical skill, and a proper blood count even to one familiar with its methods requires from ten to thirty minutes. In the study of the anemias the count of the red cells is by all means the most important, but the leucocyte count, which is even more easily made, is, as you know, of great import in many general medical and surgical conditions, both in and aside from the study of anemia. By determining the number of red cells by this instrument we are enabled to ascertain whether the anemia is due to a decrease in the number of red corpuscles or to simple diminution in the iron salt, hemoglobin. Thus in pernicious anemia we find the number of red cells greatly diminished, while the amount of hemoglobin is relatively large, each cell carrying more than its normal amount. Similarly, data of importance in prognosis can be readily ascertained, as by the number of young red cells present in proportion to old cells, particularly when contrasted in successive examinations.

Considerable attention has been paid at times to the relation of the alkalinity of the blood to anemia. Until recently, the methods for determining the alkalinity have been tedious and have demanded considerable technical skill; the very neat little instrument of Dare, the hemoalkalimeter is, however, convenient and fairly ac-

curate. I have used it faithfully as a matter of routine for over a year, but I cannot say that I consider its use of much value in the study of anemia. In diabetes, particularly just before serious symptoms intervene, the alkalinity appears to drop rapidly; in severe cases of chlorosis or pernicious anemia and also in grave secondary anemias as well it is much reduced, but you will be surprised, should you consistently employ this test, that there is so little variation shown in the great middle class of cases with which we most frequently meet.

The determination of the rate of coagulability of the blood is occasionally of considerable importance in anemia, though very rarely as a matter of routine. I have used it where the question of advisability of surgical intervention has arisen, as where surgical conditions arise in such diseases as pernicious anemia or chlorosis; and in some instances I think that I have saved the surgeon serious trouble with uncontrollable oozing. In other cases, and these more frequently, I have been able to tell him that he has nothing to fear from a lack of coagulation on the part of the blood. The old methods for this determination were inaccurate, unwieldy, and demanded the employment of a complicated and expensive instrument. The new Biffi instrument, which any of you can make in five or ten minutes, is by all odds the most accurate and the quickest to use. It will prove, I think, to be of great value to the surgeon, though not very frequently in the management of anemia. A rough but not bad test of coagulability for practical purposes can be done by making a shallow linear cut with a sharp scalpel—say on the lobe of the ear—and watching the coagulation in the drop of blood so formed; this simulates fairly well the surgical conditions, though of little value, as indicating the nature of the blood in its natural channels. A general idea of the volume of the blood is also to be obtained in this manner by close observation of the drop and its rapidity of formation.

These few manipulations, with the use of the sphygmomanometer already mentioned, comprise all that in my judgment are necessary for a practical study of the blood in the anemias. If you are concerned in research, there are, of course, other methods with which you will also acquaint yourself, but in concluding this section of my paper let me again caution you against accepting a purely laboratory diagnosis in your cases of anemia. If you do not care to do this work yourself, if you are wise and discrete, you will acquaint your laboratory man with a synopsis of the clinical aspects of the case. I am perfectly well aware that many men, and many textbooks, tell you that an absolute diagnosis of—let us say, pernicious anemia—can be made from the laboratory findings alone; this is not true, and acquaintance with the clinical aspects of the disease, with the laboratory findings and with the dead-house facts, has taught me to hold in

great suspicion the one-sided view of any one-sided man. In the study of anemia, as in all branches of medical work, we must be broad-minded, observing, critical and, above all, judicial, considering not part of the evidence, but all of it.

In the classification of the anemias, I have found it most convenient to arrange them under three heads—Primary, Secondary and Symptomatic.

Under the caption of primary anemia I include those forms which are primarily due to disease of the blood-forming organs as well as those such as chlorosis, the causative agent of which is entirely unknown.

Under secondary anemia I place those hemic conditions characterized by anemia which are directly due to some definite cause primarily affecting the blood; for example, the anemia occurring after hemorrhage, as in menorrhagia or in hemophilia. The cure in these cases is brought about simply by restitution of the normal missing elements of the blood.

It has seemed well to me to make a separate class of those anemias which arise not as a primary, nor yet as a direct secondary result, but which occur as a symptom or incident in some general process; these forms I call symptomatic anemias.

I am well aware that all these conditions can be correctly arranged under the heading of the primary or secondary, but it seems proper that we realize in this relation that the symptomatic anemias differ markedly in clinical significance, since the treatment in them must be always directed immediately to the elimination of the disease or cause productive of the condition before correction of the blood itself be attempted. Thus under symptomatic anemia I shall place the anemia occurring in nephritis, parasitic diseases, as in hookworm infection, malaria, in new growth formations and the like.

Mixed anemias are one of the most common and confusing conditions with which we contend in the diagnosis of the anemias, such a secondary condition as may take place, for example, after severe epistaxis in chlorosis, after hematuria in hemophilia or the gastric or intestinal hemorrhages so frequent in pernicious anemia. These secondary conditions so confuse the blood picture in particular that the laboratory findings are often entirely contrary to what we should expect. The clinical aspects are also seriously modified so that correct diagnosis becomes a matter of great difficulty.

These last two are certainly the most frequent types of anemia with which we meet, they are with one or two exceptions the most difficult of treatment and oftentimes the most difficult of diagnosis.

In the brief time at our disposal this evening, I shall necessarily touch on but a few types of anemia, and I shall attempt to mention the diagnostic points in but a few of the most important

and difficult conditions with which I meet most commonly. Of the primary anemias, I shall consider the diagnosis of two only, namely, pernicious anemia and chlorosis.

Pernicious Anemia.—In well-advanced cases the diagnosis of pernicious anemia, or of some of its closely simulating conditions, may almost be made from the mere inspection of the patient. The pallor is profound, and is generally accompanied by a peculiar greenish color of the skin, often with more or less puffiness. Emaciation is not the rule and in most cases the panniculus adiposus is well preserved. In the history of the case, causes sufficient to produce the obviously severe anemia are wanting, and in this respect we must not be misled by the occurrence of the by no means rare intestinal hemorrhages or by those of the other mucous tracts; these are indeed often of diagnostic significance. Great physical weakness is usually complained of, and, though in the majority of cases no mental impairment has taken place, the patient is often of a cheerful appearance and nature, and we occasionally see, particularly in the final stages, all grades of mental aberration to profound delirium with maniacal symptoms and terminal coma.

Absence of the knee-jerks, with pains like those in tabes associated with more or less ataxia, indicating degeneration of the posterior columns, may be shown and may be almost pathognomonic of pernicious anemia, which not uncommonly causes these cases to be considered as of primarily neural nature. The pulse is soft, usually rapid and the volume is small. Examination of the heart shows the common occurrence of very loud murmurs, often of such intensity and location as to cause the case to be considered one of endocarditis, and when further characterized, as occurs not infrequently, by fever often of considerable degree, the resemblance to acute malignant endocarditis is often very confusing and the distinction may rest entirely on the blood examination. Further, the heart muscle sounds give rise to the diagnosis of a myocarditis, which is an almost constant anatomical finding in pernicious anemia. Hemorrhagic retinitis is often present, and hemorrhage in any of the mucous surfaces is very apt to be found. All these manifestations may be also seen in cases of severe secondary or symptomatic anemia, and the exclusion of these possibilities must rest entirely on the negative findings of a sufficient cause in the true primary anemia; this necessitates a most thorough consideration of all aspects of the case.

The blood in pernicious anemia is characterized by its light color, and in clotting, which takes place slowly and is often incomplete, the corpuscles separate into little masses between which trickle small yellow streams of serum, all of which can be made out with the unaided eye. The number of the red cells is greatly reduced; this is one of the cardinal signs of the disease,

and the size of the red corpuscles is increased. Small red cells, or even normally sized red cells, often are in minority in marked cases. The relative amount of hemoglobin in each individual red cell is much increased, although on account of the reduction of the number of red blood cells, the total percentage of hemoglobin is markedly diminished. Megaloblasts or nucleated large red cells are present in nearly all instances, though undoubted cases are on record in which they were entirely absent. Their presence is considered as more or less pathognomonic of the disease, although they are also found in certain of the more severe symptomatic anemias. Normal-sized nucleated red cells, normoblasts, are present in most cases, particularly just before the remissions which sometimes characterize the disease.

Briefly, the blood findings may be said to simulate those of an embryonic blood, and to be characterized by decrease in number, large size and high hemoglobin index of the red cells, with the presence in most cases of megaloblasts, all characteristic, not of abnormal blood destruction, but of a deficient blood formation.

(To be Continued.)

THE DIFFERENT CONDITIONS IN TUBERCULOUS KIDNEY AND THEIR TREATMENT.¹

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THE lesions of tuberculosis of the kidney, as seen in surgical practice, vary considerably according to the stage of the disease. Practically they may be divided as follows: (a) A limited focus on the kidney substance proper; (b) multiple foci which may become confluent, pyonephrosis; (c) complicating lesions of the pelvis and ureter; (d) involvement by extension of the surrounding tissues,—tuberculous perinephritic abscess.

These lesions may be confined to one kidney; more frequently both are affected, not necessarily to the same extent. There are usually other lesions, latent or active, in other parts of the body. Sooner or later implication of the remainder or some portion of the genito-urinary tract is the rule. Treatment may be: Curative, nephrectomy. Palliative, directed toward the relief of individual or urgent symptoms.

Tuberculosis of the kidney being usually only a part of a tuberculosis with multiple lesions and generally affecting both kidneys, it is obvious that the application of radical measures must be limited. On the other hand, it is worth trying for, as other forms of surgical treatment yield meager results and frequently do harm.

Radical operation is practically limited to tuberculosis of one kidney and quiescent or no obvious general lesions. Advanced destructive process, even if limited to one kidney, will prob-

¹ Read before the section on Genito-Urinary Diseases of the Academy of Medicine, May 17, 1905.

ably have determined secondary vesical and other lesions. As we are limited in our choice of cases suitable for operation, we should all the more carefully study the symptoms which may enable us to diagnose the condition in its earlier stages.

The original focus, which is usually a tuberculous infection elsewhere, may progress very slowly and insidiously, giving practically no direct symptoms. An important factor to be borne in mind is the diathesis, and if the patient is of the tuberculous type we should always give this feature an important place, so long as another condition is not proved.

In almost all cases there develops even early a reactive chronic diffuse nephritis, evidenced by increased secretion of urine and more frequent urination, slight traces of albumin, lowered specific gravity and occasional casts pointing to a definite renal lesion. This chain of symptoms is not given the importance it deserves in the recognition of early cases.

Another early factor, which may be of importance in the absence of other definite symptoms, is a consistent and persistent evening rise of temperature, particularly if it is taken by rectum or vagina. Pain, hematuria and pyuria with acid urine, are of course more pathognomonic; but they also occur in other conditions, especially in renal calculus with which tuberculosis is most likely to be confounded. A later symptom will be an enlargement in the lumbar region. If due to enlargement of the kidney proper the tumor retains the characteristic kidney outline, if due to a pyelitis it is more globular; it may be characteristic of a perinephritic abscess. Tubercle bacilli may or not be found at any stage. The cystoscope may help by presenting a definite appearance of the ureter mouth, positive or negative, on one or both sides. The diagnosis is made from one or more of these elements, depending on the stage of the disease.

With regard to localization of the disease, localized pain and a palpable enlargement of the kidney or a tumefaction on the flank will direct our attention either to one side alone or to one side more than the other. Further information may or may not be furnished by ureteral cystoscopy or the examination of the separate urines. In the absence of definite symptoms, all ordinary means of investigation having been exhausted, we are justified in making a negative diagnosis as regards the other kidney. It is a human impossibility to establish the condition of the second kidney with certainty, and our estimates must always allow of some leeway.

Generally speaking, if there are marked evidences of a severe process in one kidney and the patient remains in good general condition, it is a fair presumption that the other kidney is in good working order, especially if the daily output of urea is well maintained.

In doubtful cases I practice and strongly recommend direct palpation or examination of the

other kidney. It is best done by using for the exposure of the certainly diseased kidney the long transverse incision. By opening the peritoneum at the mesial end away from the site of manipulation of the diseased kidney sufficient palpation of the second kidney is easily made.

It will be immediately objected that mere surface palpation can reveal little about pathological processes in the interior and still less of the functional ability. This view is erroneous up to a certain point. A kidney that is sufficiently tuberculous markedly to interfere with its function will ordinarily present modifications of its contour, and, what is more important, a considerable degree of fixation to surrounding structures. Moreover, its pelvis will also show a recognizable thickening or enlargement. So if the kidney is found to be smooth, movable, and the pelvis normal, in the absence of more definite data, I do not hesitate to consider it as sound, or sufficiently so for our purposes.

As another advantage of early diagnosis and early operation we may not be compelled to do a complete nephrectomy, resection of the limited affected portion being sometimes feasible. I believe that the greatest advance hereafter in the treatment of tuberculous kidney will be along this line, particularly as it offers a possibility of operating if necessary on both kidneys.

The outlook for operative treatment of tuberculosis other than radical, that is, primary nephrectomy, is very discouraging. Many inexperienced operators, and some who should know better, drain the tuberculous kidney with a marked pyelitis or a complicating perinephritic abscess in the erroneous belief that the apparently insurmountable obstacle to a primary nephrectomy will be favorably influenced by drainage; whereas this drainage does not in any way improve the underlying disease and therefore cannot be expected to reduce the adhesions due to the original process. Furthermore, it opens up new avenues for infection and aggravates thereby the obstacles to a later nephrectomy.

For the cases in which primary nephrectomy is contra-indicated there will be but exceptionally a compromise, *i.e.*, nephrostomy. We do not expect to cure tuberculous abscesses in other tissues by drainage alone, and the kidney presents no conditions which make it an exception to this rule. Nephrostomy means a permanent tuberculous sinus, plus escape of more or less urine, a condition of which the drawbacks and discomfort need not be emphasized. If, however, there is unbearable pain due to pressure, or very marked fever, it may very rarely be wise to relieve these symptoms, even at the expense of the drawbacks just stated.

The perinephritic abscess may be repeatedly evacuated by aspiration to relieve pressure; it may also be treated with injections of iodoform emulsion though with little prospect of cure.

For these advanced or general lesions there is,

then, little or nothing to be expected from surgical treatment. Constitutional treatment, more particularly in younger subjects, may oppose some resistance to the progress of the disease; very exceptionally it may cause it to become latent; but the severe and multiple lesions mean a condition the hopelessness of which we should appreciate and not aggravate by injudicious interference.

THE BACTERIAL TREATMENT OF SEWAGE AND ITS ADAPTABILITY TO SMALL COMMUNITIES.¹

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THE ultimate disposal of sewage is always a momentous question with every community. How it can be accomplished safely, and with the least possible cost, must be decided by each community. According to Munson, "The bacterial treatment of sewage has recently assumed importance as a simple, practical, efficient and economical means of sewage purification. It depends upon the fact that there exist in nature certain non-pathogenic micro-organisms, broadly divided into those which are aerobic and those of an anaerobic nature, whose function in life, under the conditions that their names imply, is to convert the solid portions of animal excreta and organic matter into gaseous and liquid forms by a process analogous to digestion. These little workers, known as nitrifying bacteria, live in water and moist earth—and are to be found everywhere on the earth's surface; they live and multiply under proper environment, and, while doing their life work, increase in numbers and strength. Under most favorable conditions they will multiply to such an extent that to trace the descendants of a single germ for a few days would lose one in a mass of figures past human comprehension. Colm writes as follows: "Let us assume that a microbe divides into two within an hour, these two into four in two hours, and these into eight in three hours, and so on; the number of microbes thus produced in twenty-four hours would exceed sixteen and one-half millions. At the end of twenty-four hours these microbes descended from a single individual would occupy one-fortieth of a hollow cube with edges one-twenty-fifth of an inch long, but at the end of the following day would fill a space of 27 cubic inches, and in less than five days, their volume would equal that of the entire ocean." These figures, of course, do not take into consideration the death rate of these organisms, yet they serve to indicate the immense force at our disposal for the ultimate destruction of waste organic matter.

Bacteria, functionally, are of two classes, pathogenic and non-pathogenic. It is with the non-pathogenic varieties we are at present concerned, and they may be further classified as

aerobic and anaerobic. The anaerobes live and perform their functions in the absence of an appreciable quantity of oxygen; their life-work concerns the false fermentation of proteids, breaking them up into simpler bodies with the production of evil smelling compounds, the so-called "putrid decomposition." The aerobes, on the other hand, require an excess of atmospheric oxygen, and cause the oxidation and hence purification of all oxidizable material. A preliminary anaerobic action, by breaking up and liquefying solid organic material, greatly facilitates the aerobic action. It has even been claimed that this preliminary putrefaction was necessary for the complete destruction of proteids, though it is not unreasonable to assume that, with sufficient time, the aerobes would be able to complete the process unassisted.

We have, then, living agents, capable of increasing rapidly under favorable conditions, and further capable of changing dead animal and vegetable matter into oxidizable compounds. Our endeavor should be not to destroy these agents of nature, through chemical or other means, but to conserve their energies by placing our refuse matter under conditions favorable to bacterial activity.

In considering the ultimate disposal of sewage we are dealing with a substance always complex and variable in composition, consisting as it does of solid and liquid excreta from the human body, and waste water from the kitchen, laundry, and bath room. Sewage may also contain refuse from factories of various kinds, and drainage from polluted soils. The substances to be destroyed, however, are of either an animal or a vegetable nature. Although vegetable matters are, as a rule, more refractory than animal, the end products are the same. All of these substances contain oxygen, carbon, and hydrogen, in varying proportions, and many of them contain nitrogen. Whether the sewage be emptied into a stream, on land, or on artificial beds, the means of its final disposition is the same. Through the action of these saprophytic bacteria the hydrogen and oxygen recombine to form water and the carbon becomes carbon dioxide; nitrogenous matter is broken down and, combining with oxygen and alkaline bases, forms ammonia, nitrates and nitrites. Sewage at all times contains myriads of these bacteria, as well as germs of intestinal origin, and at times the specific germs of certain diseases.

The usual method of disposing of water-carried sewage is to empty it into a stream or a large body of water, and, as a rule, this is satisfactory to the community producing the sewage. On entering a large body of water sewage becomes greatly and rapidly diluted, the organic particles are eagerly seized upon and broken up by the omnipresent germs, and the inorganic matter gradually becomes separated and settles to the bottom. Thus, in course of time, the stream purifies itself. In the land treatment of

¹ Read before the Arizona Medical Association, June 1, 1903.

sewage the same general principles apply, although the forces are under better control. Land may be used either as a sewage-farm, or as intermittent downward filtration. In the case of farms the sewage is discharged either upon, or into, a suitable soil. It is desirable that sewage should flow on to the farm by gravity, and arrangements must be made to so control the flow of sewage that it will be intermittent, in order frequently to give the soil a fresh supply of oxygen. The soil acts as a filter, straining out the solids, and the large surface of liquid exposed is rapidly oxidized; vegetables growing in the soil utilize the products of oxidation, and, as a rule, grow luxuriantly. The sale of these products will, in part at least, pay the expenses of conducting the farm. There appears to be no danger of disease from eating vegetables grown on these farms, and attendants living on them are as healthy as under other circumstances.

With intermittent downward filtration the same general principles are involved. Specially suitable porous ground is chosen and the sewage is run on to it intermittently, and drained off from below. While vegetation is not interdicted, it is of secondary consideration, and from eight to ten times as much sewage can be purified per given area as with the farm treatment. Thus, according to Munsen, an acre of ground prepared for intermittent downward filtration will effectually purify the sewage from 2,000 people, whereas, with a farm, from eight to ten acres would be required. The effluent from land treatment of either description is said to be clear and free from odor; it will support the life of fish and is a safe drinking water.

Of the strictly artificial methods for the bacterial treatment of sewage we have: (1) Single and double contact beds, or intermittent filters; (2) continuous or trickling filters, and (3) septic or precipitation tanks.

These methods may be used alone or in various combinations to meet local requirements.

Treatment by contact or bacteria beds is equivalent to land treatment with the advantage of a greatly lessened area required, and hence a greatly reduced cost. It has a further advantage in that the conditions for bacterial growth are under better control.

A contact bed is a reservoir of suitable size and depth, which is filled with a porous material, and so arranged that the sewage can be run on to the bed until the fluid reaches the surface of the filtering material. The sewage remains in the bed for two hours and is then drawn off at the bottom. The bed is now given a rest of two hours during which time it will again become aerated and be ready for another charge of sewage. The best results with this form of treatment have been obtained by passing the sewage through a settling tank to remove the inorganic solids and to break up the coarser organic particles, then on to a coarse coke bacteria bed, and finally on to a fine coke or a coarse

sand bed. This effluent will contain a high percentage of nitrates and nitrites, and, if desirable, may be used upon land.

In continuous filtration, either the settled or screened crude sewage, or the effluent from a septic tank, is distributed in thin sheets or drops equally over the surface of the filter. These filters should be so constructed that the sides and bottoms are well aerated. The filtering material should be hard so that it will not crumble and choke the filter. The pieces should go between two and three inches in diameter, and irregular in fracture, so as to give the largest possible surface for aeration. As the fluid drips from one piece to another there is a constant replenishing of oxygen. According to the Leeds experiments it has been found practicable for long periods to work coarse continuous filters at the rate of 200 gallons per square yard per day, for septic effluent. At this rate results giving over 90 per cent. purification are obtained, while with the same area 1,000 gallons per day can be purified sufficiently to meet ordinary requirements, and 10,000 gallons per day will not choke the filter. With crude sewage a greater area would be required.

In all of these methods there has been considerable difficulty experienced with both inorganic and organic solids. Screening would remove the coarser particles, but sand and grit, with solid organic matter, would gradually accumulate and eventually choke the filter, causing expense and delay in its removal. To overcome this difficulty McDonald Cameron, of Exeter, experimented with a preliminary anaerobic treatment in closed tanks. This treatment gives rise to a putrefactive action, and has been called the septic tank system. By this means practically all of the suspended inorganic matter is retained in a settling tank, and 25 to 40 per cent. of the organic solids is liquefied or given off in the form of gas. The effluent from these tanks, however, is far from pure and requires further treatment with contact beds, filters or land. The following general observations on septic tanks are taken from Dibdin's "Purification of Sewage and Water." "When a septic tank is first started a simple disposition of the suspended matter occurs, the effluent obtained being in reality only settled sewage. Soon, however, a fermentation of the deposited solids takes place, and a large volume of gaseous products is evolved. The period elapsing between the starting of the tanks and the occurrence of the phenomenon varies with the weather, being shortest in summer. This evolution of gas gradually increases until sufficient has accumulated in the deposit to raise large portions of the latter to the surface of the liquid, where part of them remain supported. Other parts will settle to the bottom, to be again raised by the constantly forming gas. Thus a constant movement is kept up, until much of the solid organic matter is reduced to liquid and gaseous states. The min-

eral and inorganic solids gradually separate and settle to the bottom of the tank. While these changes have been taking place in the contents of the tank, the character of the effluent has also altered. The first flow does not differ from settled sewage, but, as the putrefaction of the sediment proceeds, the effluent becomes darker and almost black, and somewhat offensive, owing to the solution of some of the products of bacterial action and the production of sulphides of iron."

Disposing of sewage by bacterial treatment practically eliminates all danger of contaminating the subsoil, and, by running a pure effluent into our streams and lakes we will keep the waters vastly more fit for use. More than that, it has been shown that such effluents containing, as they do, great numbers of nitrifying bacteria will considerably improve an already polluted stream. The effect of this process on active disease germs, and especially those of enteric fever, has not been thoroughly demonstrated, and in time of epidemic it would be well to further treat the final effluent by chemical means.

The particular method to be used will vary with the locality, the amount and composition of the sewage, and the means at hand. Carried out on a small scale the initial cost is very small, and the cost of maintenance is practically nothing. According to Dibdin the consensus of opinion at the present time is in favor of detritus or septic tanks followed by either: (1) Single contact beds and land, or double contact beds where suitable land is not available; (2) continuous filtration, or (3) when the best possible effluent is required, double contact beds and suitable land, or fine sand beds.

The system now in operation at the Geological Survey Camp at Roosevelt consists of a septic tank, followed by a continuous trickling filter. Approximately 3,000 gallons of sewage passes through the tank and filter in twenty-four hours. The tank is of concrete floor and sides with a board roof covered with earth. It is forty feet long, eight feet wide, and three feet deep, and divided into three compartments by two walls. It has a capacity of about 3,600 gallons, so that the sewage remains in the tank between twenty-four and thirty hours. The inlet to the first compartment is by a 6-inch pipe, connected with the main sewer, one foot below the surface of the fluid when the tank is full. This compartment is the grit chamber and measures 5 x 8 feet and is six feet in depth. From here the sewage passes through an opening in the dividing wall one foot beneath the surface into the septic chamber 8 x 30 feet and three feet deep. In this compartment are a number of partitions extending alternately from either side of the tank and extending nearly across.

These partitions retard the flow of sewage and permit of greater fermentation. The sewage now passes through another opening one foot from the surface into a small compartment, from

which the effluent overflows at the top into a 4-inch iron pipe, and is conducted by it to the distributor. The distributor consists of a box four inches square and three feet long, with eight cross sticks passing through. These cross sticks are grooved on top, and, as the effluent rises in the box to the level of the grooves, it passes out and flows over the sides of the cross sticks and drips on the surface of the filter. The filter is a wood frame one yard square and ten feet high, placed on a slanting concrete floor. The sides of the frame are latticed so as to give plenty of air. The filling material is of small boulders between two and three inches in diameter. On the floor is a collecting drain which leads by a short outflow pipe to the power canal. This system has been in operation but a short time, and it is too early to draw conclusions from it. From present appearances, however, it will prove entirely satisfactory. It is my intention to make a report at our next meeting on this system, also on the one to be operated at the camp of J. M. O'Rourke & Company, contractors, who will build the Roosevelt dam.

A STUDY OF THE RESULTS OF ABDOMINAL HYSTERECTOMY FOR FIBROIDS OF THE UTERUS, WITH AND WITHOUT DRAINAGE.

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OF NEW YORK.

THIS study was undertaken with a view toward ascertaining the difference in the immediate results of abdominal hysterectomy, or rather in supravaginal amputation for fibroids of the uterus, upon the comfort, rapidity of convalescence, and general condition of the patient, in those cases in which drainage through the vagina was instituted, and in those in which it was omitted. The cases included are those which have been operated upon in my service at the Mt. Sinai Hospital, covering a period of two years, from December 1, 1902, to December 1, 1904. There are in all 54 cases. There was no mortality, complications of an inflammatory or other character were very few, and, generally speaking, the total results could hardly be improved upon. It may be well to state that no differentiation has been made between the cases operated upon in the old hospital, where the facilities were far inferior to those in use in the present hospital, which came into clinical use on March 26, 1904. Of the 54 operations, 32 were performed with gauze drainage through the cervix, and 22 without.

For the thorough appreciation of any set of statistics referring to operations, the technics of the operator are an essential; I shall therefore briefly describe my mode of procedure in a typical case of abdominal hysterectomy. This does not differ materially from that of other operators, except in a few unimportant details; the

length of the abdominal incision is regulated by the size of the tumor; very little time is taken up in preliminary hemostasis; the ovarian artery and round ligament on both sides are ligated with silk, and the bladder peeled off from the anterior surface of the uterus. A small posterior flap of peritoneum is then dissected from the cervix at about the height of the insertion of the sacro-uterine ligament, the uterine arteries are ligated with silk, and the uterus amputated in such a way as to leave a crater-like cervical stump. When drainage was practised a piece of iodoform gauze was now put through the cervix, the upper end left long enough to cover the cervical stump, with the idea that it should act more as a compression for the slight oozing, than as actual drainage; the anterior and posterior peritoneal flaps are then united by a running catgut suture, starting at the ligature over the ovarian artery, so as to invert both this ligature and the round ligament, leaving no raw surface or free pedicle within the abdominal cavity. When drainage is not resorted to, the cervical stump is closed with a running catgut suture, and the peritoneal flaps united as in the other cases. After removing the appendix a running catgut suture closes the parietal peritoneum, interrupted silk sutures unite the fascia, and the skin is either sewed by a running suture, strapped, or united with Michel's clamps, dependent upon the amount of adipose tissue in the abdominal wall.

It is well to say at the outset that the immediate results of abdominal hysterectomy by all operators are satisfactory in the main; the mortality is not high in uncomplicated cases, and the convalescence undisturbed; to substantiate this, I will refer only to the large statistics of Winter,¹ who has collected 689 cases of supravaginal amputation with a mortality of 32, or 4.66 per cent. His table includes 105 operations by Henricius, with 2 deaths, 118 by Hofmeier, with 5 deaths, 122 by v. Rosthorn, with a mortality of 4; 77 by Wyder, with 6 deaths, 100 by Olshausen, with 6 deaths, and 167 by himself, with a mortality of 9.

Pulse.—The study of the pulse-rate for the first five days after operation furnishes us with the interesting fact that the heart's action is practically the same in both sets of cases. In drained cases the average low pulse is 85, the average high pulse is 97, and the average for five days after operation, 91; in undrained cases the average low pulse is 88, the average high pulse is 99, while the general average for the first five days is 93. In neither series of cases could any particular course be made out, the morning pulse often being higher than the evening. The highest pulse rate was observed during the first forty-eight hours after operation. Comparing the two figures, we are justified in concluding that drainage as employed by us, or its absence, does not perceptibly affect the heart's

action; as the pulse affords the most reliable index to the course of convalescence, this is undoubtedly a most important consideration.

Temperature.—The temperature charts show an average high temperature of 100.8° F., an average low temperature of 99.8° and an average temperature for five days after operation of 100.3° F.; the temperatures being identical for both sets of cases. The highest temperatures in all cases were registered within forty-eight hours after operation, this being due to absorption, or possibly to imperfect hemostasis. A fact worthy of mention is that we have invariably noted a rise in temperature of from two to three degrees within forty-eight hours after operation.

As far, then as pulse and temperature, the two great criteria for judging the patient's condition are concerned, we find that the results are practically the same, whether drainage is employed or not.

Gastric Disturbances.—In all cases the combined anesthesia or nitrous oxide¹ and ether was employed. A certain amount of nausea and vomiting, due entirely to the anesthesia, is the rule for the first twenty-four hours after operation, and will not be considered further. If nausea and vomiting persist for days, they are certainly due to the operative procedure; to the manipulation of the pelvic organs and intestines, and to the breaking up of adhesions, etc. We find that of the drained cases, 72.4 per cent. were not nauseated at all, whereas 14.5 per cent. were noticeably affected; 61 per cent. did not vomit at all, whereas 29 per cent. vomited very severely; one patient vomited so excessively for six days that a serious complication resulted, which will be described later. Of the undrained cases, 41 per cent. were not nauseated at all, whereas 18 per cent. were nauseated to such an extent that great distress was experienced; 1 was nauseated for eight days. Three patients did not vomit at all, and 6 vomited excessively. The drained cases certainly appear to advantage in these important factors in the comfort of the patient. There were 20 free from nausea, and 19 free from vomiting, while we find among the undrained cases only 9 free from nausea, and 3 free from vomiting; prolonged nausea and vomiting were also more frequent in the undrained cases.

While it is true that individual idiosyncrasies exist among patients as regards their reaction after operations, it would appear, nevertheless, that patients in whom the supravaginal stump was drained with gauze, enjoy more gastric comfort than those in whom this method was not resorted to.

Intestinal Reaction.—A very important factor in the comfort of patients after abdominal section, is the abdominal distention due to the accumulation of gas in the intestines. In the majority of uncomplicated cases of fibroid, Tren-

¹ Zeit. f. Geb. u. Gynäk. Vol. 51.

¹ The records as to nausea and vomiting are somewhat imperfect.

delenburg's position is employed immediately after opening the abdominal cavity; this causes the intestines to recede into the upper half of the peritoneal cavity, where they are covered with moist pads, and do not receive any insult further than exposure to the air; on this account severe symptoms due to extreme distention are naturally very rare. Reviewing the history charts, we find that among the drained cases there were 7 with no distention whatever, 13 moderately, and 12 considerably distended; however, only 2 patients were greatly distressed by this symptom. Of the undrained cases, 3 had no meteorism, 8 were slightly distended, and 11 distended to a considerable degree. It is evident that as far as postoperative distention is concerned, it makes little difference whether drainage is employed or not. For relief of the distention, we resorted to the use of the rectal tube, low and high enemata, and in a few cases calomel and salines. Forty per cent. of the drained cases, and 40.8 per cent. of the undrained cases had their bowels moved by low enema on the third day; in only 9 cases of the drained, and 8 of the undrained, was it found necessary to resort to this procedure for the relief of abdominal distention, before the third day.

In general the principles which I have repeatedly expressed¹ in regard to moving the bowels were strictly adhered to, and no difference in any respect was found between the two classes of cases.

Pain.—In all cases of both series, there was a moderate amount of pain present, due to the operative procedure. Small doses of Magendie's solution, given at frequent intervals, relieved the pain in all instances; this medication was invariably discarded after the second day.

Catheterization.—One might expect that the period during which catheterization was necessary would be of longer duration in those cases in which gauze was employed for drainage; this, however, is not borne out by the facts; if there is any difference, we find it in favor of the drained cases. It is shown that the average length of time in which catheterization was necessary, was 1.3 days in the undrained, and 1.5 days in the drained cases, a difference hardly worthy of consideration. Only one patient urinated voluntarily of the drained cases, and two of the undrained; no cystitis developed in either series. It is evident that in respect to catheterization, both series are almost equal.

Convalescence.—Primary union resulted in the great majority of cases in both series. In all drained cases, after the removal of the pelvic gauze, there was a vaginal discharge with more or less odor, necessitating the employment of irrigations, which were never necessary in the undrained cases. This discharge was profuse, lasting sometimes for weeks.

Of the undrained cases the average length of time in bed was twenty days for 19 patients (the records of the exact time are not complete), the longest time was thirty-eight days for one patient, in whom the fascial sutures tore through on account of excessive vomiting, and the shortest stay was fourteen days. Among the drained cases the average time in bed was seventeen and one-half days, the longest period was thirty days, and the shortest, eleven days; these figures, however, are of no import, as, firstly, the records are incomplete, and secondly, one patient's complications necessitated such a prolonged stay in bed that the figures were materially influenced.

Complications.—Although in the main the convalescence from the operations was smooth, a number of patients developed complications which in some instances gave rise to pain and distress, and in others ran a prolonged course which kept them in bed longer than was the usual rule. Among the drained cases there were two cases of wound infection, one in which silk, and one exceptional case in which silkworm gut had been used to close the skin wound. Both cases showed the *Staphylococcus aureus* on culture. In a third case, a hematoma developed under the skin, which had been closed by clamps. The hematoma did not become infected, and the wound healed promptly after evacuating the blood. In only one instance was the whole wound infected, the others being sharply localized. All of these cases ran a low temperature for from six to nine days. In the undrained set of cases, there were five instances of wound disturbance. Two of the wounds became infected with the *Staphylococcus aureus*, one of the patients running a temperature between 100.5° and 101.5° F. for nineteen days. In one case the entire wound, though not infected, tore open to the fascia (this had been sutured with silk). In another the upper angle of the fascia separated, giving rise to a prolapse of omentum. This was repaired immediately on its discovery, and the skin wound, which was small, healed by granulation. In still another case the fascial sutures were torn through on account of excessive vomiting, with a prolapse of the intestine.

Among the drained cases, one patient with a chronic myocarditis developed an embolic process in the left pleura, the exact nature of which was not determined. She had a temperature varying from 99° to 102° F. for ten days, during five of which she vomited constantly; she was discharged cured. On the twelfth and thirteenth days one patient vomited without assignable cause. Another patient had frequent urination for two weeks, but there was no cystitis. One patient developed a bronchopneumonia of other origin, which lasted for ten days, and another had a severe bronchitis for a week, also probably due to the anesthetic.

Among the undrained cases, there was one patient who had frequent urination for two weeks

¹ "The Question of Early Catharsis after Celiotomy." By the Author. N. Y. Journal of Gynecology and Obstetrics, 1894.

without the development of a cystitis. Another had a curious edema of the labia majora which lasted for three days, and disappeared as rapidly as it had come. Another had a severe erythema toxicum for four days, and still another had a superficial burn of the abdomen of unascertainable origin. The pelvis gave rise to few disturbances. In the drained set of cases, one patient developed an exudate on the left side, with a temperature of 102.2° F., which gradually reached normal in seven days. At the time of discharge the exudate could scarcely be felt, and gave no pain or discomfort. Another patient had a retroperitoneal hematoma which became infected and gave rise to a temperature of 104.8° F., with a correspondingly rapid pulse. This was relieved by posterior section, and the patient left the hospital well. Among the undrained cases one patient had a small stump exudate, which disappeared before she left the hospital. Another developed an exudate on the right side, with a temperature of 101° F., lasting for five days; this exudate, too, had almost disappeared when the patient was discharged.

Deaths.—There were no deaths among the 54 cases.

In conclusion, I wish to say that from the observations made in these two series of cases, generally speaking, there is not the slightest difference in the immediate postoperative course, whether drainage is practised or not. Before starting these two series, I always employed drainage, more for the purpose of controlling the small amount of oozing, than for actual drainage; during this time a few instances occurred where a retroperitoneal hematoma formed and became infected after the removal of the gauze from the cervix. This complication, though not of any serious consequence, was always unpleasant; to-day, therefore, it appears preferable to me to sew up the stump in all cases, so as to assure a more perfect hemostasis.

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MEDICAL PROGRESS.

MEDICINE.

Cardiac Neurosis; The Necessity of Its Proper Diagnosis.—G. L. DAVIDSON (*St. Louis Med. Rev.*, September 9, 1905), in considering the various cardiac conditions which are purely of nervous origin and which are not associated with any definite pathological lesion, gives among the many causes acting through the nervous system in producing these functional cardiac symptoms, the following: Blood changes such as anemia, uremia, rheumatism, the puerperal state and various toxins; the many disorders of digestion, such as hyperacidity, overeating, dilatation and distention of the stomach, cancer of the stomach or liver, constipation or flatulence, which are very frequent causes; the various diseases of the uterus and its appendages, hysteria, excessive use of alcohol, tea, coffee or tobacco, convalescence from acute febrile diseases, loss of sleep, continued mental strain, excessive physical exercise; and, in fact, any disease of any organ in the body which exercises

a depressing or exciting influence upon the nervous system may give rise to a functional disorder of the heart, so closely resembling a true organic lesion as to mislead us and eclipse the real trouble. The varieties of functional disorder the author mentions as follows: (1) Those affecting the force of cardiac action; (a) overaction, which would indicate hypertrophy; (b) feeble action, simulating fatty degeneration. (2) Those relating to rhythm, such as the intermittent, the irregular, or palpitation. (3) Those affecting the sounds of the heart, such as feebleness, or accentuation of either the first or second sound, or a muffled sound blending the two into only one sound (as sometimes in effusion into the pericardium), and murmurs of various kinds over any part of the cardiac region, either systolic or diastolic (often encountered in disorders of the blood such as anemia, chlorosis, rheumatism, uremia, etc.), and often mistaken for true valvular lesions. (4) Relating to frequency, as the infrequent (bradycardia) or the unusually frequent (tachycardia), which may lead us to suspect an organic disease of the nerve ganglia of the heart, or some nerve lesion of central origin.

Abdominal Crises Caused by Meckel's Diverticulum.—M. F. PORTER (*Journal A. M. A.*, September 23) calls attention to the accidents that may be caused by the presence of a Meckel's diverticulum, an anomaly that probably exists in 1 or 2 per cent. of all individuals. He has collected altogether 184 cases of abdominal accidents from this cause, of which he gives brief abstracts, including 35 not heretofore published. Intestinal obstruction by band occurred in 101 cases, volvulus in 8 cases, intussusception in 20, diverticulitis in 17, prolapse of the bowel through a patent diverticulum in 2; typhoid perforation in 5, traumatic perforation in 1 and tuberculous ulceration in 2 cases. In the 21 cases of hernia reported in the paper the diverticulum was the cause of the trouble in all but one; in that one it was simply noted as forming the content of the sac. The average age of the patients was twenty-one years and two months, but the list includes six over fifty years, one patient being eighty-one years of age. In 5 cases the diverticulum was patent at the umbilicus. Symptoms of acute obstruction were manifest from the start in 118 cases, and incomplete obstructions were present throughout in 7. In 17 cases there had been attacks of incomplete obstruction prior to the final acute attack. In 20 cases the symptoms were those of general or circumscribed peritonitis. Appendicitis was diagnosed in many cases, and was a complication in one. The proportion of males to females was 3 to 1, suggesting trauma as an important cause. The total mortality was 60 per cent., and of those operated on 50 per cent. Except in cases patulous at the umbilicus, there are no distinctive symptoms pointing to the diverticulum, and in only one of the cases was it diagnosed prior to operation. In conclusion, Porter urges the removal of all diverticula met with in abdominal operations, whether the cause of trouble or not, provided the exigencies of the case in hand do not contraindicate further operative procedure.

Vomiting with Acetonemia (Cyclic Vomiting) in Children.—C. MIRAILLE (*Gaz. Médicale de Nantes*, No. 19), in writing on the above subject, concludes as follows: "We must not forget the prognosis as regards the maturer age of the patient. These children are really cases for future arthritic trouble, a prey to all the complication of the acid diathesis.

We are not sure where the production of the acetone takes place, or what is the exact rôle it plays in this morbid state. It seems probable that its production has some relation with hepatic insufficiency. Above all, it is to be noticed that acetone by itself is but slightly toxic; it cannot be the cause of the attacks. It is like the attacks themselves, a manifestation of an innoxiation more profound, an intoxication due to a cause and of a nature unknown, according to Marfo; an acid intoxication according to Czerny. Acetonemia, considered by itself, has not, then, any precise signification, but is the index of a nutritional disturbance which can take place under different conditions. Acetonemia is met with in widely different conditions whenever the toxins of albuminoid disintegration, manufactured in too great a quantity, find the liver unequal to the work.

Drugs and the Diazo Reaction.—Incited by a statement in the medical press that certain drugs will cause a positive reaction to the usual diazo test, W. W. GOLDEN (*Journal A. M. A.*, September 23) reports the results of a series of experiments made with these drugs on patients with normal urinary reaction. While the observations are not numerous, he thinks that, so far as they go, they most emphatically disprove the reiterated assertion that salol, thymol, sodium sulphocarbolate and guaiacol carbonate have the power of producing the diazo reaction in the urine of persons taking these drugs. He also made two experiments to test the persistency of this reaction in urine after long standing, with or without the addition of preservatives. Two samples of typhoid urine, one with the addition of 2 c.c. of chloroform and one without, were allowed to stand for periods, respectively, of one week and forty-eight hours, and the reaction was found unimpaired.

Thyroid Disease in California.—H. C. MOFFITT (*Journal A. M. A.*, September 16) writes interestingly on thyroid disease in California. Observation has convinced him that thyroid disease is more common in San Francisco than in many other cities, and he has studied the subject by correspondence with other physicians throughout the State. Goiter is more common, especially about San Francisco Bay, and less frequent in the southern part of the State and in the mountains, and is endemic in certain portions of the northern section. Myxedema seems to be more frequent in San Francisco, perhaps because most patients drift there. He has reports of 53 cases in that city and 33 throughout the State, excluding *formes frustes*, of which he has notes of 11 cases. These are characterized by dry skin, scaling of the scalp, thinning of the eyebrows and loss of hair from the neck and in the axillæ, pains in the knees and ankles and between the shoulders, and fat pads about the upper back and clavicle are characteristic. Of sporadic cretinism, he has collected 61 cases altogether, 35 of them in San Francisco. Exophthalmic goiter seems to be much more common in Bay counties than elsewhere in the State, and he remarks on the danger of the use of the iodine preparations, especially when a goiter exists, however small. He has had several cases of iodism in patients with small goiters, and he suggests the possibility of the strong sea winds in San Francisco affecting the frequency of cases. The therapy of thyroid conditions is discussed at some length. The reports as to thyroid medication in myxedema and cretinism are enthusiastic; large doses are not required, and they may produce unpleasant symptoms in myxedema. He has seen good results in exophthal-

mic goiter from long-continued faradism. He thinks many cases of exophthalmic goiter are amenable to surgery, and that more attention should be given to the statement of Horsley that division of the isthmus alone leads to retrogressive changes and shrinking in the rest of the gland.

A New Indican Test.—Instead of chloride of lime or chloride of iron, A. GÜBNER (*Münch. med. Woch.*, August 15, 1905) recommends osmic acid. An equal amount of concentrated hydrochloric acid is added to the urine, then two to three drops of a one per cent solution of osmic acid. Depending upon the amount of indican present, the urine will now turn violet, bluish-violet or a pure blue. If necessary, chloroform may be added like in the older tests. An excess of osmic acid does not matter, since this is not able to further alter the indican.

Modification of Sahli's Test-Meal.—H. P. T. OERUM (*Deutsches Arch. f. klin. Med.*, Vol. 83, Nos. 3 and 4) has found that the soup recommended by Sahli (roasted flour with butter) is not very palatable, so that he has substituted barley for the flour. If given according to the directions of Sahli, more information concerning the function of the stomach can be obtained than with an ordinary test-meal, since the amount of gastric juice secreted is also taken into consideration. It is thus possible to discriminate between hyperchlorhydria and supersecretion. The latter condition was found with nervous dyspepsia, the dyspepsia of constipation, enteritis, nephrolithiasis, cholelithiasis, tenia, etc., while hyperchlorhydria is seen in most cases of ulcer and chlorosis. The test-meal also permits one to distinguish readily between atony and supersecretion. In order to determine the amount of fat in the test-meal, it is not imperative to resort to a special centrifuge; it is only necessary to graduate the tubes of an ordinary centrifuge, so that the amount of fat, separated off after the amyl alcohol and sulphuric acid are added, may be read off and the necessary calculation made.

Pulmonary Streptothricosis.—T. G. ASHTON and G. W. NORRIS (*Journal A. M. A.*, September 9) report two cases of streptothricosis of the lungs and review the literature of the condition. They remark that one reason that this condition is not more often recognized is because it is not readily demonstrable by the ordinary carbol-fuchsin method of sputum examination. The micro-organism has been found in many cases only after the Gram method has been employed; hence, in suspected tuberculosis, when the tubercle bacillus is lacking, recourse should be had to this method. Of course, the mere presence of the streptothrix in the sputum or tissues does not necessarily prove it to be the primary infection. It may be secondary, but there are cases in which this has been shown to be the main and probably the sole agency. The tendency to metastasis, especially in the acute bronchopneumonic type, is remarked, the skin and brain being the most frequent localities, but other tissues and organs have also been involved. Clinically, streptothricosis of the lungs appears in two forms, the acute bronchopneumonic form, pyemic in its later stages, and the chronic form, first described by Flexner, which is clinically almost identical with pulmonary tuberculosis. In both cases reported, the patients were treated by stimulation and nourishing diet, and one decidedly improved and left the hospital. The other, under the same treatment, became progressively worse, the infection being apparently more virulent.

OBSTETRICS AND GYNECOLOGY.

Paravaginal Operation in Uterine Carcinoma.—Improvement in operative technic may accomplish much in the betterment of operative results in carcinoma of the uterus. The generally accepted radical operation of to-day includes extirpation of the uterus and appendages, together with the excision of the parametria, a portion of the vagina and a routine ablation of the lymphatic system of the pelvis. The last-named procedure is based on the assumption that the pelvic glands are early affected and would frustrate the object of the operation if left behind. Based upon an exhaustive study of authentic cases G. GELLHORN (*Am. Jour. Obstet.*, July, 1905) states that in cervical cancer the pelvic glands are affected in less than one-third of all cases, the invasions taking place after the parametria are infiltrated. The attempt to remove the glands as a routine procedure would subject two-thirds of the cases to an unnecessary operation fraught with considerable danger. The extirpation of the glands is almost always incomplete, both for technical and anatomical reasons. In view of these considerations the systematic search for, and routine ablation of the pelvic glands in carcinoma of the cervix uteri should be abandoned. In most cases, recurrence of cancer can only be prevented by giving the cervix the widest possible birth. The paravaginal method meets all requirements and is a distinct advantage over the abdominal route. The technic is in the main as follows: A lateral incision splits the whole vaginal tube, the left labium, the paravaginal and pararectal tissues, levator ani and coccygeal muscles. The vagina is then caught as far away from the cancer as possible with vulsella in a circular direction cancer as possible with vulsella in a circular direction. Below the vulsella a circular incision is made through the vagina connecting with the paravaginal cut. The vagina is now dissected off and the cuff thus formed sewed over the portio vaginalis. After the bladder has been separated by blunt dissection, Douglas' space is opened and the parametria found within easy reach.

Arteriosclerosis of the Uterus.—Having made numerous clinical and anatomical studies of cases operated on for uterine hemorrhage of obscure origin, P. FINDLEY (*Am. Jour. Obstet.*, July, 1905) has come to the belief that the essential cause lies in the myometrium, the sclerosed blood vessels and remote embarrassments to the circulation exercising a secondary influence. Metritis as a primary lesion independent of infection, is not accorded the consideration merited by its frequency and clinical significance. The muscular fibers of the uterine wall have an important function in controlling the caliber of the blood vessels and hence in regulating the blood supply to the uterus, as evidenced in the relaxed conditions of the uterine wall during menstruation and in post-abortive and post-partum hemorrhages. In all these conditions the hemorrhages are controlled by the contractions of the uterus. In view of the above, it is evident that any condition which lowers the muscular tone of the uterus may occasion an abnormal loss of blood into the endometrium and uterine cavity. The factors which contribute to muscular atomy of the uterus are wasting diseases, anemias and acute febrile diseases which are often followed by uterine hemorrhages as a result of weakened support to the vessel walls from myodegeneration. Fibrosis uteri is a more frequent cause of muscular insufficiency. The connective tissue changes due to passive congestion, may be dependent upon an incompetent heart, obstructions in the lungs, liver, kidney and spleen, abdominal swellings, varicose veins of the pelvis and

uterine displacements. The walls of the blood vessels share in the hyperplastic changes resulting in an impairment of elasticity and a thickening of the media and adventitia. This condition is to be distinguished from the arterio-obliterans of the normal senile uterus, in which the vessels are partially or wholly obliterated by the thickened intima and contractions of the vessel walls. In the cases studied no hemorrhages were seen to come from ruptured vessel walls, but were capillary, often far removed from the sclerosed vessels. The diagnoses can only be made by first excluding other possible causes such as polyps, carcinoma and fibroids. The palliative treatment consists in rest, ergot, styptic applications and packing the uterine cavity. It is often necessary to resort to hysterectomy after repeated curetments have failed.

Atmocausis of the Uterus.—A woman, thirty-nine years old, having suffered from profuse and painful menstruations, was curetted, after which superheated steam was applied for one minute at 110° C. After three months amenorrhea the menstrual flow became more profuse than before the operation. A year and six months after the application of the steam, H. FLEISCHMANN (*Zentralbl. für Gynäkol.*, 1905, No. 20) performed a vaginal hysterectomy and found the uterus large, the walls thickened, the vessels sclerosed and the mucous membrane scarred and depressed in the lower part of the cavity, but swollen in the upper part. The microscope revealed a hyperplasia and hypertrophy of glands in the thickened mucosa. The central portion of the cavity was most affected by the steam, there being an atrophied mucosa devoid of glands. The membrane in the lowest part contained a few cystic glands. The writer suggests that the converging strokes of the curette in the lower segment might explain the irregular effects of the steam. In this case the atmocausis failed to obliterate the uterine glands or destroy the mucous membrane.

EYE, EAR, NOSE AND THROAT.

Progressive Axial Myopia.—The prevalence and increase of myopia is noticed by F. S. CROCKER (*Journal A. M. A.*, Aug. 26), who discusses his method of treating it by prism exercises of the internal recti and by the local careful use of galvanism, in addition to the routine treatment of refractive errors and vertical imbalance by glasses. In exceptional cases, these measures are supplemented by operation. The patient is given a single square prism, usually 10 per cent. or weaker, for practice with at home, and, with the glasses that have been ordered in use, is instructed to produce a crossed diplopia by viewing a candle at a level at about 20 feet distance, with the prism over either eye, base out, and then to attempt to fuse or bring the two lights into one. The exercise should be divided between the two eyes, the prisms being removed as soon as the two images are fused. This should be done twice or three times a day, and if noticeable pain is produced the time should be shortened. Each strength of prism should be used till the fusion is produced without apparent effort, and then gradually increased until a sufficient power of convergence has been obtained, the minimum in this practice being 48 degrees. During this treatment, which averages three or four months, he uses two or three times a week the interrupted galvanic current thirty or forty interruptions to the minute, the positive pole being applied by well-moistened sponges over the closed upper lids with the other pole at the nape of the neck. The current is then turned on gradually with the rheostat till a faint flash is seen by the patient with each interruption. No pain or discomfort should be pro-

duced, and the slight blurring of vision that may follow its application should pass away in a very few moments. Aside from the direct value of the galvanism, these office treatments enable the physician to see that his instructions are carried out. Patients, of course, should be instructed as to the proper use of their eyes and the amount of work to be done with them. He ends by stating that the most important etiologic factor in very many cases of progressive myopia is the insufficient power of convergence. It is immaterial whether this defect is in the anatomy of the orbit or imperfect insertion or innervation of the muscles. Whenever destructive fundus changes have not already seriously affected vision, it is possible to effect a cure. Proper attention should always be given to the eye muscles, as well as to refractive errors, and none but properly qualified individuals should be allowed to prescribe glasses.

The Epidemic of Pfeiffer's Glandular Fever.—Chicago physicians have had scores of cases of a peculiar glandular fever in children which resembled a streptococcus sore throat, but was accompanied by sudden and marked swelling of the cervical glands, signs and symptoms of a general sepsis, swelling of the spleen and liver, and in severe cases by acute nephritis. Influenza bacilli are found on the tonsils, as well as pus cocci. HELIODOR SCHILLER reports cases in the *Journal A. M. A.*, Aug. 5, in detail and discusses the diagnosis. Diphtheria and tuberculosis were easily excluded. No case was fatal, in spite of the serious character of disease and complications in some of the cases. Schiller says that physicians with hospital privileges ought to be able to make careful study of the disease and to report interestingly.

Submucous Resection of the Nasal Septum.—Realizing the lack of permanency in the results obtained by conservative operations for deflected nasal septum, J. J. MOONEY (*Buffalo Med. Jour.*, Aug., 1905) describes a method of submucous resection of the nasal septum, which is a modification of the Killian method. The operation consists in making a semilunar incision, under local anesthesia, through the mucous membrane, separating the mucous membrane and perichondrium with a dull elevator, cutting the cartilage and then separating the mucous membrane and perichondrium on the opposite side. The involved portion of cartilage is then removed by means of a Killian or Bollenger knife. Submucous polypi can be removed in the same manner. Ordinarily healing takes place in twenty-four to forty-eight hours by first intention. Its advantages, as claimed by the author, are: Simplicity of technic, shortness of time required, that it can be performed from either side, healing takes place in a short time and recurrence is impossible.

THERAPEUTICS.

Radium Treatment of Cancer of the Esophagus.—Cancer of the esophagus is one of the most intractable diseases with which we have to deal. Not even modern surgery has succeeded in combating this disease. MAX EINHORN (*Jour. A. M. A.*, July 1, 1905) reports on seventy-two cases that have been treated with radium. The radium receptacle for the esophagus consists of a rubber tube (about 17 F. diameter) which is provided with a mandrin and a capsule, the lower part of which is made of hard rubber and the upper part of metal. The two halves are screwed together. The upper part of the capsule is provided with a screw thread, by means of which it is attached to the screw tube portion. The capsules are made in three different sizes to fit strictures of various sizes. In using, the instrument is introduced into the mouth of the patient, the end being held in the hand. The results, considering the grave nature

of the condition, have been generally satisfactory, and the method is destined to play an important rôle in the treatment of cancer of the esophagus and deserves to be tried on a larger scale.

Massage of the Heart.—H. M. W. GRAY reports a case of resuscitation by means of subdiaphragmatic transperitoneal massage of the heart (*Lancet*, Aug. 19, 1905). A female patient, aged fifty-five years, was admitted to the hospital at 11.45 A.M., suffering from marked laryngeal obstruction. She was deeply cyanosed, inspiration was much obstructed, and expiration was also interfered with. At 12.53 P.M. the patient was reported as dying, and by the time the ward was reached she was apparently dead. High tracheotomy was immediately performed with a penknife, but the patient only made four or five spontaneous respiratory efforts. There was from the first no pulse at the wrist nor cardiac impulse. She was pallid, all reflexes lost, pupils widely dilated, muscles flaccid, and her eyes rapidly assumed a "glassy" look. Four or five minutes after the tracheotomy, the abdomen was opened in the middle line under the xiphoid, again with a penknife. The heart, absolutely flaccid, was easily palpated. Massage by intermittent pressure, 70 to 90 per minute, was carried out for about four minutes. At the end of this time the heart was felt gradually contracting, and after a few seconds more slowly beating. The pulsations were at first feeble, but after a few seconds more massage the beat grew stronger and quicker until at 1.07 it was beating at the rate of 90, and more vigorously than since admission. Soon after the heart began to beat, respiration became spontaneous. The patient died at 3 P.M. without having regained consciousness.

High-Frequency Current and the X-Ray in Pulmonary Tuberculosis.—Many investigators throughout the country have been using the newer forms of electrical treatment in pulmonary tuberculosis, but the details of operation have been too varied to admit of definitely formulating a technique that should be conclusive. O. SHEPARD BARNUM (*Arch. of Phys. Ther.*, Aug., 1905) reports five cases that have been treated and carefully details the method of procedure, in the hope that the results will be rendered comparable with those obtained by other operators. The inhibitive effect of the X-rays on the tuberculous process is utilized by combining one X-ray treatment per week with the high-frequency treatments. A high tube is used at a distance of 20 inches for a period ranging from five to twenty minutes. The effect is chiefly appreciable in the increased amount of expectoration. He administers the high frequency twice or thrice weekly, as may be advisable, for the entire time the patient is under his care. The treatment consists of a thirty-minute rest in a reclining-chair or couch which is in circuit with the machine, and is without sensation of any kind whatever; patients frequently go to sleep during the séance. Its effects are an immediate rise of temperature of at least one degree within the time of sitting, and a "feeling of lightness," as it is generally termed by the patients, which is in reality a very slight exhilaration, remaining appreciable during the subsequent forty-eight to seventy-two hours. At the end of a month the improvement is sufficient to give renewed hope and courage to the patient, and from then on the gain is usually steady, being particularly noticeable in the increase of flesh and a remarkable diminution in the number of bacilli in the sputum, as evidenced in the microscopical reports given above. Oscillations vary but little, either by difference in length of spark-gap, exciting force or construction of apparatus. He believes that quantity and ampérage are key-notes of successful treatment.

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THE MODERN CONCEPTION OF DIABETES.

AN auspicious event in the annals of scientific medicine in New York has just closed, and those who have had the rare privilege of listening to one of the foremost of the younger generation of German clinicians, the inspiration and teaching of Prof. Carl von Noorden will prove a fruitful heritage. The series of lectures on the pathological chemistry and treatment of diabetes mellitus, which have been delivered under the auspices of the Herter Lectureship at the University and Bellevue Hospital Medical College by the distinguished chief of the City Hospital of Frankfurt-a.-Main, are, beginning with this issue, presented in abstract form to the readers of the *MEDICAL NEWS* (See page 798). A perusal of these cannot fail to excite admiration for the physician who has happily combined the results of laboratory investigation with the teachings of the bedside.

No other disease has made such large demands upon both of these resources of the science of medicine as has diabetes. Intimately bound up with so many intricate problems of metabolism, it has been a fascinating subject of study to the physiologist, the pathologist and the practitioner. Yet, in spite of the vast amount of patient investigation that has been devoted to this study,

the causes of diabetes are still veiled in obscurity. One theory after another has been put forth, but none of these has adequately served as the basis of a rational prophylaxis and treatment. The value of hypotheses in medicine may be gauged by the practical results proceeding from their application. Measured by the magnificent system of therapy that has been reared upon the hypothesis of von Noorden, his conception of diabetes is the best that has yet been advanced, even though no account be taken of the numerous experimental and clinical data upon which it is based.

According to this conception diabetes is a perversion of metabolism characterized by the inability on the part of the bodily cells to utilize the sugar in the blood. In order that the carbohydrates, which are the principal source of the bodily heat and work-power, may take part in the exchanges of the organism, they are first transferred into glucose, which is further split up into glycogen, a substance well-adapted for storage in the cells. It is the oxidation of this substance that is the immediate source of the bodily heat and muscular energy. Unless it is first transferred into glycogen, the glucose is of absolutely no use to the cells. It is this inability to transform glucose into glycogen and fixing this to the cells that forms the fundamental vice of the diabetic condition. This failure of glycolysis accounts for the abnormally large content of sugar in the blood. But there is another circumstance that contributes largely to this hyperglycemia, namely, the overproduction of sugar in the organism. Under ordinary conditions the carbohydrates not immediately needed for consumption are stored up, principally in the liver, in the form of glycogen. As the glycogen of the cells is used up, the latter make known their want, either through the agency of the central nervous system or of certain chemical reactions. The liver is called upon to furnish a fresh supply of glycogen to the cells. Transported to the latter in the form of sugar, the latter is used up as rapidly as it is delivered. "In diabetes the tissues go hungry for sugar because they are unable to get it. From them the liver possibly gets the signal for the further mobilization of sugar. In the healthy the mobilized sugar steps out into the breach where it is used up. In diabetes the reserves are called out in vain; they cannot reach the place where they are needed, and they are uselessly squandered." The more the tissues hunger for sugar,

the more is the formation of sugar by the liver affected. The abnormal appetite of the diabetic is the constitutional expression of this starvation of the cells. The inordinate demands made upon the liver soon results in the exhaustion of its store held in reserve. The proteids and then the fats of the body are in turn called upon to furnish the sugar, which, like the gold in the fable of the golden touch, is of no use to the magic hand that effected its formation.

The amino-acids that form part of the proteid molecule, such as glycocoll, alanin, leucin, are the source of the sugar thus forced from proteid. In a few cases of diabetes more sugar is excreted than can come from the proteids and carbohydrates available. The conclusion is drawn that this excess of sugar is derived from the fats, although under ordinary conditions no sugar is thus formed.

The aceton-bodies are attributed to the same error of metabolism that lies at the root of glycosuria. They are derived from the fatty acids, and the factor that determines their appearance is the exclusion of the carbohydrates from metabolism. Thus, in severe cases of diabetes in which the carbohydrates are partly or totally restricted, the resulting acetonemia may be a source of embarrassment to the physician, who, fearing the possibility of the onset of diabetic coma, may order the resumption of carbohydrates in the diet. But, as a rule, more is to be feared from the aggregation of the diabetic process thus produced, for this in itself will ultimately cause a greater increase in the amount of aceton bodies in the blood. As regards the necessity of testing the urine for these substances, it must be remembered that diacetic and oxybutyric acids deserve as much attention as aceton. Thus, up to a certain point, aceton alone appears in the urine. Beyond this point it is accompanied by diacetic acid. When the amount of aceton reaches one gram there is an appearance of from 30 to 40 grams of oxybutyric acid. The importance of this fact should be borne in mind, for it has been shown in von Noorden's laboratory that oxybutyric acid is toxic and that diabetic coma is to be attributed partly to this substance.

Von Noorden's remarks on the early stages of diabetes deserve particular attention. In the vast majority of cases this disease presents itself to the physician only in its florid stage. The period of development is a closed book to him. In the very rare cases in which the begin-

ning of the disease has been observed, as in physicians and pharmacists who made it a practice to examine their urine regularly, it has been noted that for many years before the disease is fully developed there are transitory attacks of glycosuria appearing at irregular intervals. No case of temporary glycosuria should be slighted; but the urine of the patient should be examined at stated intervals, and if the attack recurs frequently, then proper dietetic measures may be resorted to in order to ward off the serious consequences of the diabetes which may ensue.

Modern investigation points to the pancreas as the source of some substance instrumental in either in the building up or breaking down of glycogen. This substance is probably a ferment or an anti-ferment, in the latter case preventing a too rapid destruction of glycogen. In many cases of true diabetes neither macroscopic nor microscopic lesions of the pancreas are observed, and it is concluded that the disorder in the pancreas resides in the intracellular chemical mechanisms that are concerned in the elaboration of the internal secretion. This disorder may exist without impressing any anatomical or histological change in the pancreas. The islands of Langerhans are now looked upon as a stage in the evolution of the true secreting cells of the pancreas, rather than being regarded as the seat of the elaboration of the internal secretion.

HEMOPHILIA.

JUST as in ordinary popular literature, there is every few years, often apparently without any definite reason, a revival of interest in some old-time author, so in medical literature, there are cycles of revivals of attention for diseases that have been known for many years but that seem to present some new phase. During the past year or two there has been such a decided reawakening of interest in hemophilia, and some important additions to our knowledge have been made.

While the affection is in most cases distinctly hereditary, occurring for the most part in the males of the family, and being transmitted through the females who rarely suffer from it, a certain number of genuine cases of hemophilia have been reported in the last decade, in which there was no hereditary influence traceable for three or more generations. As has been said with regard to certain nervous diseases which are distinctly hereditary, these affections must begin somewhere, and it seems not unlikely that in

these cases we are in the presence of an ancestor rather than a descendant, one who is to transmit the disease, though himself without hereditary tendency to it.

Another rather interesting feature has been the description of cases of true hemophilia occurring in the female. Usually these cases have been in young children. As can be well understood, the menstrual period in females suffering from hemophilia would usually prove so serious a drain upon the health owing to the blood dyscrasia present, that such patients would not be likely to survive the establishment of the menstrual process. There has been some discussion as to whether tendencies to hemophilia do not occur more frequently among young female children than has been thought, but prove fatal before adult life. The curious biological factors in the disease, by which it is transmitted by the female who herself is not a sufferer from the affection, has been noted as a peculiar exemplification of natural selection. If the female suffered from the disease as well as the male there would be a liability to so many fatal hemorrhagic incidents in the course of menstruation and childbearing that it would not be long before the families would disappear. Their survival is due to the exception of the female from the diathesis in the family stock.

A highly speculative and at the same time suggestive therapeutic procedure is suggested by the fact of this immunity in women. It is but recently that Lachlan Grant (*Lancet*, Nov. 5, 1904) proposed the use of ovarian extracts for the treatment of bleeders, feeling that in these substances, perhaps, might reside certain immunizing principles. Their therapeutic utility he has tested with some small measure of success.

While the problems connected with the pathological changes are far from being solved, the attention of pathologists is centering about studies tending to show that the affection is not a change in the blood itself, but is rather a congenital pathological anomaly of the vascular system. For a long time it was considered that the reason for the persistence of the bleeding in sufferers from hemophilia was a lack of coagulating power in their blood. The effects of calcium chloride therapy would tend to support the view. The coagulating power, however, has been tested recently in a large number of cases and has been shown to be quite equal to that of normal individuals. On the other hand, careful histological investigations have tended to support Virchow's conception of a peculiar delicacy of structure in

the smaller blood vessels and a tendency to the absence of the elastic material, on which the contraction and closure of injured blood vessels depends. The bearing of these observations is reinforced by some recent therapeutic developments. A very successful method of treating the bleeding in hemophilia has been found in the use of large doses of some derivative of the suprarenal gland. This has the effect of stimulating the blood vessels to contract and consequently makes up, for the time being at least, for their natural lack of contractility in this disease. Notwithstanding this successful suggestion for therapeutics, however, it is to be noted that sufferers from hemophilia do not exhibit any tendency to have lower blood pressure than normal individuals and indeed have no constitutional manifestations of their affection at all, except when trauma of some kind leads to the beginning of hemorrhage. Moreover, suprarenal extracts have proven unavailing in many instances.

A very interesting phase of recent observation consists in the similarity between certain forms of hemorrhagic arthritis in connection with hemophilia and tuberculous disease of the joints. In more than one recently reported case the swelling in a joint, consequent upon an effusion of blood into it, has been mistaken for tuberculous arthritis and the patient has been prepared for operation. There are a few cases in literature in which sufferers from supposed tuberculous joints have died from hemorrhage after operation, and there is question whether these were not further examples of this same simulative tendency. Sometimes in hemophilia a number of joints are affected in this way at the same time, and one observer has recently pointed out that occasionally young adults suffering from hemophilia are reported as having died from generalized tuberculosis. There has, indeed, been a tradition that sufferers from hemophilia were more liable to tuberculosis than normal individuals. There is more than a suspicion that the true etiological factor in the symptoms in both the lungs and the joints as well as the abdominal cavity in these cases was really the hemophilic diathesis. It must not be forgotten that hemophilia can produce very deceptive symptoms in the lungs, and that a severe attack of coughing may be the cause of a whole set of peculiar physical signs in the lungs which are really due to minute hemorrhages from the capillary blood vessels of the bronchi.

MEETING OF THE NEW YORK STATE MEDICAL ASSOCIATION.

THE twenty-second annual meeting of the New York State Medical Association promises to go down in history as one of the most noteworthy in its career. There seems now to be no doubt that an amalgamation of the two medical organizations that have hitherto existed in this State will be consummated within a few months. The business meetings of the first and second days were very fully attended, evidently by those deeply interested in seeing personally that there should be no hindrance to reunion this time, if show of numbers could effect the purpose. The vote carefully recorded and taken by roll call shows that the members of the Association were practically unanimous in their demand for the amalgamation of the two professional bodies. The two members who voted nay in the face of over fifteen hundred yeas may be considered the heroes of a lost cause, but are much more likely to prove, if eventually their names should become known, to be merely obstinate individuals who never by any chance depart from an established opinion.

One of the most noteworthy features of the present meeting has been the special attention devoted by the Ladies' Auxiliary to supplying interesting social entertainments for the wives and other feminine relatives who accompanied the doctors to this meeting. Each morning of the meeting members of the Ladies' Committee were ready to meet lady visitors, to accompany them on sight-seeing or shopping expeditions or, continuing the quotation from the circular, "to assist them in any way that would contribute to the enjoyment of their visit." A special automobile drive around the upper part of New York was conducted on one beautiful day and a steamboat excursion around Manhattan Island on another. These features, which have been lacking at the meetings of State medical organizations in New York State before this, will doubtless be continued after reunion and will make a striking attraction that will be thoroughly appreciated by lady visitors.

The scientific business of the meeting was quite the equal in interest of the other features specially planned for this year. The symposium on hygiene and preventive medicine, held on Wednesday morning, was taken part in by some of the best authorities in New York State, and as it involved the two most important practical questions that the profession has to deal with,

those of the protection of the water supply and the protection of the milk supply, it can be readily understood that it was listened to with zealous attention and drew a good crowd. The symposium of Wednesday afternoon on various practical considerations of eclampsia, in the light of our present knowledge, was really the most prominent scientific feature of the meeting and an event in the medical history of the year.

While in giving up its name the Medical Association was apparently signing its own death warrant and assisting at its own obsequies, there was no doubt at all in the minds of those in attendance at this meeting of the vitality of the corpse and of its approximate resurrection, which will be seen as the result of the new blood injected into the Medical Society of the State of New York. While it gives up only its name, the combined organizations are to exist under the plan which has been worked out by the New York State Medical Association so effectively that it has now been adopted as the plan of the American Medical Association and is recommended by the national body to all the States as the most effective method of the organization to enable them to secure all the advantages that are desired from professional reunion. While then we write Vale to the New York State Medical Association, in the more proper sense we write Ave or Hail to the new body that is to arise from the union.

ECHOES AND NEWS.**NEW YORK.**

New York Doctors in New Jersey.—Beginning October 15, 1905, New York physicians who want to practice in New Jersey will have to pass a rigid examination. The State Board of Health of that State has adopted a rule to that effect, and the authorities declare it will not be rescinded until the New York authorities agree to allow duly qualified New Jersey doctors to practice in this State without special examinations. A conference on the subject was held recently by representatives of the New York State Regents and delegates from New Jersey medical societies. It was announced last week by Dr. Edward Hill Baldwin, of Newark, president of the New Jersey Board of Health, that there could be only one solution of the affair, and that was for the Regents to agree to admit duly registered New Jersey practitioners to equal privileges with their professional brethren on this side of the Hudson. This situation is due to a controversy which has been waged for several years between the medical authorities of the two States. New Jersey has no medical colleges of her own and sends her young men to institutions in New York City and Philadelphia to earn their degrees in medicine. Requirements for a certificate to practise in New Jersey

were raised in 1903, the Health Board of that State asserts, to equal if not slightly exceed in rigor those of the New York Regents. The Health Board of New Jersey then sent a request that New York indorse the new certificates. The Regents have made it a practice never to indorse any body, not even New Jersey lawyers, and as a result there followed an animated controversy. Each side spoke of the other as stubborn, and after negotiations had been conducted without any hope of settlement medical diplomatic relations were severed. By this action to-day many New York physicians who have been in the habit of establishing themselves at New Jersey summer resorts for two or three months of the year will be most affected. Before they can do so hereafter they will have to qualify by passing an examination in New Jersey, and it will not be a very easy one. Young New Jersey physicians who aspired to practise for the summer at Long Island coast resorts and were prevented from doing so by the New York laws will now have their revenge. Several eminent physicians in Lakewood, N. J., are registered both in New Jersey and New York by examination, so that they will suffer no inconvenience. New York specialists who may be summoned to consultation with their New Jersey brethren will not have to be examined.

City Plans a Tuberculosis Hospital.—As soon as plans can be prepared and the contracts let work will begin on the New York City Sanatorium for Consumptives, which is to be built on Staten Island on a site already the property of the city. The preliminary drawings have been approved by James H. Tully, Commissioner of Charities. The sanatorium will be in the center of Staten Island, where the city owns 130 acres of land. Part of this land was acquired by the annexation of Richmond County. The rest was purchased. The sanatorium will accommodate 800 patients, and will cost about \$2,000,000, exclusive of site. Last spring \$200,000 was appropriated for beginning the work, and Commissioner Tully hopes before this is expended to have quarters for 100 patients. "There is nothing in common between the sanatorium to be built on Staten Island and the proposed sanitarium for the treatment of incipient cases," said Commissioner Tully. "It is entirely separate from the undertaking of the Health Department. We will treat consumption in all stages, and, to my mind, no nobler work was ever undertaken by the city. There are thousands of men and women suffering from the disease who are unable to receive modern treatment, and to whom the idea of going to Blackwell's Island, where they could at least obtain pure air and sunshine, is repulsive. The Staten Island property overlooks the Narrows and the Lower Bay. It is the highest point on the Atlantic coast between Portland and the Gulf of Mexico. It is true that the air is not dry, but the principal thing is to get pure air, and we will get plenty of it there. The site is within easy reach of the city. Facing due south, it will be protected on the north by an extended woodland. There is plenty of room for the institution to grow. The amount already appropriated will give us a good start, and further appropriations will doubtless be forthcoming when needed. I have talked over the plans with Mayor McClellan, and he has approved them." Mayor McClellan instructed Commissioner Tully early last summer to have the estimates and drawings for the sanatorium prepared, and the appointment of Ar-

chitect Almirall followed. With Dr. John F. Fitzgerald, the General Medical Superintendent of the Department of Charities, he inspected the tuberculosis sanatoria of New York State and Massachusetts, and his preliminary drawings incorporate the most advanced ideas. The ward buildings are to be erected in the form of an arc, which is designed to furnish the maximum sun exposures. At the terminations of the arc will be grouped the service buildings, with a power house so situated as ultimately to serve the farm colony and dormitories of the Department of Charities. Midway in the line connecting the ends of the arc will be the administration building, between which and the ward buildings the kitchen and dining hall will stand. The administration building will contain the offices, examining rooms and laboratories, and will also house the staff and provide operating and accessory rooms for general hospital purposes. The Nurses' Home, which will stand to the west of the administration building, will provide bedrooms, sitting and lecture rooms, library, kitchen and dining-rooms, with a suitable class kitchen and experiment room for the housing and training of nurses. Immediately to the south of the Nurses' Home will be the amusement hall. The power house and laundry buildings, with the omnibus and ambulance house, will be built to the east of the administration building. From east to west, arranged on the arc and projecting from it to the south, will be the ward and single room pavilions, with the chapel for religious services. Each of the three pavilions planned will accommodate about 100 patients. At the southern extremity of each ward will be a sun parlor, and at the sides of each ward will be verandas, with sufficient space for every bed and ample distance between and to the backs of them. The windows will extend from ceiling to floor, so that the beds can be rolled out on the verandas. The entire roof of each ward building is to be treated as a roof garden, with the northern end inclosed in glass, shaded with khaki awnings, for use as a sun parlor. Two of the ward buildings are to be given up to single rooms for the care of the more advanced cases. The buildings will be reinforced concrete throughout, with red tile roofs, and the iron of the verandas will be painted green.

PHILADELPHIA.

Children Barred from Attending School.—As a result of the examinations made by the inspectors of the Bureau of Health 675 children were excluded from school for one of two causes; they were either victims of a transmissible disease or they had not sufficient evidence of vaccination. During the month of September the inspectors made 15,729 examinations.

Chinese Physicians Visit Hospitals.—Having attended the army and navy surgeons' convention at Detroit and having completed their visit to the Johns Hopkins Hospital, Dr. Ho Kan Yen, fleet surgeon of the Chinese man-of-war Hai Chow; Dr. Tsui Ying Young, major surgeon in the Chinese army, and Dr. W. P. Chung, surgeon at the Government Hospital, at Chamaufar, China, visited the University of Pennsylvania Hospital and the Philadelphia Hospital. They will stay here several days and expect to see operations of various kinds.

A Case of Caisson Disease.—Thomas Sheehan, of Twenty-second and Albans streets, was taken to the Polyclinic Hospital in a semiconscious condi-

tion, suffering with caisson disease. The malady was contracted while working at the Williamsburg bridge in New York City. He first observed a stiffening of the joints, then a partial paralysis. While walking along the street one evening he was seized with an attack and fell unconscious in the street, where the patrol picked him up and carried him to the hospital.

Meeting of the Philadelphia County Medical Society.—This society held its regular meeting Oct. 11, 1905, with Dr. J. M. Anders in the chair. Dr. D. L. Edsall read a paper on the "Physiology of Glycolysis." Dr. L. Napoleon Boston read a paper on the "Varieties of Glycosuria." Dr. A. G. Ellis read a paper on the "Relation of Diabetes Insipidus and Diabetes Mellitus." Dr. James Tyson read a paper on the "Management of Diabetes." The discussion was opened by Dr. Henry and continued by Dr. Hare, Dr. Scott, Dr. Daland and Dr. Swan.

Meeting of the Philadelphia Pediatric Society.—This was held Oct. 10, 1905, with Dr. McKee in the chair. Dr. Millicent B. Hopkins showed a "Case of Intra-uterine Amputation," "A Case of Chorea with a Heart Lesion," "A Case of Bell's Palsy Following Otitis Media." The discussion on these cases was opened by Dr. Hammond and continued by Dr. Griffith and Dr. Harlan. Dr. Arthur Van Harlingen read a paper on "A Case of Molluscum Contagiosum." The subject was discussed by Dr. Hand, Griffith, Ostheimer and Harlingen. Dr. Herbert Carpenter showed a "Case of Infantile Scurvy." This case was discussed by Drs. Miller, Griffith, Westcott, McKee and Carpenter. Dr. Howard Carpenter showed two cases of "Muscular Dystrophy" occurring in brothers. The cases were discussed by Drs. Hand and Griffith.

Advances in Sanitation.—Dr. Samuel Dixon, Commissioner of Health, and his Advisory Board held their first meeting, at which the Commissioner gave a short summary of the work that has been done by the new department in its many and broad lines of labor. He has prepared regulations to prevent the spread of an epidemic of smallpox in Pennsylvania. These regulations will be sent to the physicians and to any others who may have to deal with smallpox or other contagious diseases. He maintains that so soon as the local health authorities are aware of the existence of a case of smallpox their action should be immediate and exhaustive. He advises that quarantine of patients and households be absolute; that the house be conspicuously placarded; that if necessary guards should be placed to enforce the quarantine; he advises that the source of the infection should be determined; that domestic animals and pets be quarantined. The isolation should extend twenty days beyond the cure of the last developed case.

Alvarenga Prize of the College of Physicians of Philadelphia.—The College of Physicians of Philadelphia announces that the next award of the Alvarenga Prize, being the income for one year of the bequest of the late Senor Alvarenga, and amounting to about \$180, will be made on July 14, 1906, provided that an essay deemed by the Committee of Award to be worthy of the prize shall have been offered. Essays intended for competition may be upon any subject in medicine, but cannot have been published. They must be typewritten, and must be received by the secretary of the college on or before May 1, 1906. Each essay must be sent without signature, but must be plainly marked with a motto

and be accompanied by a sealed envelope having on its outside the motto of the paper and within the name and address of the author. It is a condition of competition that the successful essay or a copy of it shall remain in possession of the college; other essays will be returned upon application within three months after the award. The Alvarenga Prize for 1905 has been awarded to Dr. Chalmers Watson, of Edinburgh, for his essay entitled "The Importance of Diet; An Experimental Study from a New Standpoint."

CHICAGO.

New Plan at Northwestern.—Steps for making the medical school of Northwestern University an integral part of the institution were recently taken at a meeting of the Board of Trustees of the University. The Governing Board of the medical school was instructed to turn over to the university trustees the \$350,000 special endowment of the former. The University Board, it is thought, will be the immediate supervisor of the affairs of the Medical Department in the future.

Hospitals Are Cheated.—Chicago hospitals who maintain an open free list are complaining of the imposition of patients from other cities asking for charity treatment when able to pay for medical services. A large number of charity entries, mostly from large Eastern cities, have turned out to be persons of means, and in many cases of comparative wealth. This condition of affairs was brought to light through an investigation conducted by various hospital authorities since the recent attempt of New York to ship lunatics to Chicago. One case is cited as that of a woman charity patient at the South Side Hospital. Recently she made a will showing that she possessed considerable money, which was deposited in an Evanston bank, as well as valuable real estate in Chicago and several Eastern cities.

Diphtheria in South Chicago.—Apropos of recent sensational statements of a diphtheria epidemic raging in this part of the city, Chief Medical Inspector Spalding reports in the weekly bulletin of the Health Department for October 7 as follows: "Diphtheria in South Chicago according to reports of cases received shows no increase. Department inspectors have been in the infected neighborhood and believe the doctors are quite generally reporting the cases. Physicians were found who did not know that diphtheria should be reported to the Department, and many of them were not aware that antitoxin is furnished free for administration in cases where parents are unable to pay for treatment. Some doctors were using antitoxin as a curative remedy, but owing to the expense preventive treatment has not been practised to any extent. Physicians have been again informed that the Department will furnish antitoxin free for such as are unable to pay—both for preventive as well as for curative treatment. A close watch is being kept upon the infected district and all aid possible will be rendered to the resident physicians. They will be encouraged to resort to immunization, urged to report all cases to the Department and disinfection of infected premises will be promptly made. The sensational charge that parents are having their children insured and exposing them to diphtheria for the purpose of collecting insurance money after death, is so absurd that it merits no notice except for the fact that it is a grave charge against a child-

loving people, for the parents of no nationality show love for their children more than the Polish. Our inspectors find that there is not the slightest foundation for such a charge."

CANADA.

The New Alexandra Hospital.—Montreal for cases of diphtheria, scarlet fever and measles occurring among the English people of that city is nearing completion, but \$150,000 is still needed to carry out the plans of the Board of Directors to success. There are to be three wards with 112 beds.

First Training School for Nurses in Canada.—The General and Marine Hospital, St. Catharines, Ont., was the first hospital in Canada to have a training school for nurses. The hospital itself was founded by Dr. Theophilus Mack in 1865, and the training school was brought into existence in 1873. The matron of the hospital, Miss Mooney, was commissioned to go to England, which she did, and returned with three trained nurses from Guy's Hospital, London. The three-year period is in force in the institution.

Montreal Tuberculosis League Finds a New Home.—Citizens of Montreal who have been taking an active part in the work of the League for the Prevention of Tuberculosis have been working for the establishment of a new home for patients suffering from anemia and debility, as well as for those predisposed to weakness and in the pretuberculous stage, and the result is Brehner Rest, at Ste. Agathe, fifty miles from Montreal. It is expected that Brehner Rest will be open for patients about May 15, 1906, and at the outset the accommodation will be limited to twelve patients. Dr. A. J. Richer, of Montreal, is the physician in charge.

Annual Meeting of the Winnipeg Medical Association.—The annual meeting of the Winnipeg Medical Association was held on Oct. 6 in the Medical Library Building. The following were the officers elected for the ensuing year: President, Dr. Gordon Bell; First Vice-President, Dr. E. W. Montgomery; Second Vice-President, Dr. J. R. Davidson; Secretary-Treasurer, Dr. Charles Wollard; Executive Council, Drs. Mary Crawford, Hugh Mackay, A. D. Carscallen and N. J. McLean. An Archives Committee was appointed to collect and preserve the records of the association and the papers read before it, the members of this committee being Drs. Beath, Vrooman and Woollard. The membership of the association is now ninety-seven.

Personals.—Dr. Douglass, Medical Health Officer of Winnipeg, has returned from the annual meeting of the American Public Health Association at Boston. During his visit to Boston he consulted with eminent sanitarians as to the best means of eliminating typhoid fever from the city of Winnipeg.

Dr. G. W. Elliott, who was a practising physician in Dawson for six years, but latterly of Winnipeg, has been appointed by the Dominion Immigration Department at Ottawa medical inspector at Ellis Island, New York. Dr. Elliott entered the immigration service in May last. When leaving Dawson he came out in the winter of 1901 and walked the whole distance to Skagway, a journey which took him exactly thirty-one days of continuous walking.

Dr. Charles Doherty, the Medical superintendent of the British Columbia Provincial Hospital for the Insane, reports that there were 353 inmates in that institution on September 1; that there were eleven admissions during the month and one death.

GENERAL.

Tri-State Medical Association of Mississippi, Arkansas and Tennessee.—This association will hold its twenty-second annual meeting at Memphis, Tenn., in the Hotel Gayoso, on November 21, 22 and 23, 1905. The secretary of the association, Dr. Richmond McKinney, Memphis Trust Company Building, Memphis, Tenn., will be glad to supply any information that may be desired concerning the meeting.

Diarrhea in St. Petersburg.—There is an alarming increase of cases of gastro-intestinal disorders at St. Petersburg, owing to the fact that tens of thousands of workmen are idle and are compelled to live on a semistarvation diet; and in Russia this means all that it implies. The sanitary condition of the baking establishments was found to be extremely unsatisfactory; the bread is bitter, of a "watery" taste, etc. In addition to the above the population devours an enormous amount of decayed vegetables, which is another source of gastro-intestinal diseases.

Yellow Fever in Convents.—The yellow fever report to last Sunday is as follows: New cases, 23; total, 3,023. Deaths, 3; total, 391. New foci, 4; cases under treatment, 227; discharged, 2,405. The Sunday record would have been the lowest of this season but for the report of a nest of infection in another convent and asylum, the attending physician reporting six cases among the girls in the Mount Carmel Institute Asylum, in Piety Street. There have been several cases in the Mount Carmel Convent, in St. Cloud Street, and as these two institutions are closely allied it is very likely the infection was transmitted from one to the other.

Woman's Medical Institute.—Out of over a thousand applications for admission into the Woman's Medical Institute at St. Petersburg hardly two hundred will be considered, owing to lack of accommodations for a greater number. Notwithstanding the fact that the nation needs physicians (there hardly being 20,000 of them to a population of over 135 millions), and now more than ever before the Government is so greatly in fear of multiplying the number of "intellectuals" that it not only fails to meet the demand for more physicians by establishing new schools or enlarging old ones, but it actually refuses permission for such to private individuals or associations.

Caucasian Medical Society.—The members connected with the many watering places of that region forwarded a collective protest to the Minister of the Interior against the prohibition of the employment of these waters by Jewish patients. This prohibition the protestants characterize justly as an "unnecessary and stupid cruelty," especially out of tune with the tendencies of the present hour, when a wave of reform is spreading all over the land, and the autocracy is compelled to abolish many of its former restrictions. The Jewish patients, when permitted to seek a cure at these resorts, are subjected to so many unspeakable humiliations by the local administrations as to make their stay there either entirely impossible or very much limited.

Care and Control of Feeble-Minded.—The Royal Commission on the Care and Control of the Feeble-Minded has deputed five of its members to visit America in order to inquire into the arrangements in force in that country in respect of such persons as come within the terms of the reference to the commission. The commissioners selected for this

duty are: Mr. W. P. Byrne, C.B., of the Home Office; Mr. W. H. Dickinson, L.C.C., chairman of the National Association for Promoting the Welfare of the Feeble-Minded; Dr. H. B. Donkin, one of the Commissioners of Prisons; Dr. J. C. Dunlop, Inspector under the Inebriates Act in Scotland; and Mrs. Pinsent, of Birmingham. The deputies arrived in New York last week and have now commenced their tour of inspection.

Psychic Derangement in Russia.—It is difficult to take seriously the assertions of a well-known Russian psychiatrist, Dr. Jacoby, that the insurrection aboard the Russian battleship *Potemkin* Tarrichesky is to be regarded rather as an explosion of a "collective" psychic derangement than as a well-organized plot against absolutism, which failed only because it was precipitated before it ripened fully. It seems that the doctor is simply moved by humanitarian principles in making, as it were, an indirect appeal to the Russian Government not to visit its customary savage punishment on such of the insurrectionists as will fall into its hands (it is said, however, that it has already executed all those who surrendered voluntarily, or who have been inveigled by promises of light punishment), but rather to consider them as psychically unstable individuals who should be submitted to examination by an expert alienist so as to establish the degree of their responsibility in the matter. On the other hand, it must in truth be admitted that the present condition of internal affairs in Russia has given rise to an enormous number of cases of individual as well as collective "induced" psychoses. The entire "psyche" of the land is woefully out of joint. The reaction to even slight irritation is more pronounced than ever before, and a comparatively insignificant amount of bad "vodka" (to take one example out of many) has been found repeatedly to be sufficient to inflame an entire regiment of reservists into maniacal fury, with tendencies toward plunder, riot and even wholesale murder. Still we think that as regards the *Potemkin* affair Dr. Jacoby seems to stretch the point just a little too far.

The First Belgian Congress of Neurology and Psychiatry.—On September 28 and 29 there was held at Liège, in connection with the International Exhibition which is now in progress in the city, the first Belgian Congress of Neurology and Psychiatry. The opening meeting took place in the buildings of the university, where M. de Latour, Director-General of the Ministry of Justice, received the delegates from France, Germany, Holland, Switzerland, Turkey and Roumania. Dr. Glorieux began the formal business of the congress by delivering an address dealing with the occurrence of neurasthenia among the working classes. This disease was, he remarked, popularly supposed to be confined almost entirely to persons for whom the struggle for existence was a mental rather than a physical one, though probably the unrestrained pursuit of pleasure was also in some degree responsible for its development. Statistics, however, showed that in both Germany and Belgium the incidence of neurasthenia upon artisans was very marked, while in Scandinavia insurance companies have been so severely taxed by the extension of the malady that they have found it advisable to construct special sanatoriums. Dr. Glorieux referred to the view that neurasthenia may be due to the toxic effects of influenza, but he himself attributed the disease to the insanitary environment in which work is often carried on, and he

looked to the more general introduction of machinery and the consequent regulation of the conditions of labor for improvement in this regard. In the afternoon Mdlle. Joteyko, chief of the Psycho-Physiological Laboratory of the University of Brussels, contributed a paper on the Sense of Pain, and Dr. Lannois, of Lyons, one upon Epileptiform Spasm of the Foot, while Dr. Heilporn, of Antwerp, described a case of Acromegaly. The morning of the second day was devoted to a visit to the asylum of St. Agatha and to the discussion of Dr. Cuyllit's paper entitled "Work in the Therapeutics of Mental Maladies." A visit was also paid to the *maison de sante* at Glain, and after lunch the scientific section of the exhibition was inspected.

Suicide and Sex.—Not long ago attention was drawn in these columns to an analysis of the official suicide returns of fifty cities in the United States, by a well-known American statistician, Mr. F. L. Hoffmann. The figures with which he dealt were those relating to the year 1904; they showed that out of every 100,000 of the population 195 persons had committed suicide during the year, and that the rate had been persistently rising for fourteen years. Another statistician, Professor W. B. Bailey, of Yale, appears to have been investigating the same question from another point of view. Dealing with the 29,344 cases of suicide officially recorded between 1897 and 1901 he finds that the male suicides outnumber those of the "weaker sex" by seven to two, while as regards the age incidence of a morbid inclination toward *felo de se* the age period of 20 to 50 covers nearly two-thirds of all the cases. In the absence of any information as to the relative number of persons in the United States at the different age periods this statement is not very informing, but so far as it goes it would seem to indicate that under the lower age limit there are few to whom life seems unattractive, while after 50 a natural end looms so near that it is scarcely worth while to precipitate its arrival. Other results are more illuminating. It would appear that, other things being equal, a married man is more likely to commit suicide than either a single man or a married woman, while women who are single, either because widowed or divorced, or because they have never been anything else, seem to find life less attractive than similarly circumstanced men. Neither ill-health nor alcohol are such potent causes of suicide as business losses, and to the latter even absorbing sentiment such as is represented by a love affair has to yield the palm. Since business plays so prominent a part in the production of suicide, it is comprehensible that Saturday should not be a popular day on which to ring down the curtain. Those who meditate this step have worried through the week, have received their pay, and have anyhow a day of rest before them. Monday—Black Monday—is the day when those faced by business disaster or crushed by personal ill-health seem least disposed to continue the struggle. On the other hand, Sunday is the day when, for women at any rate, domestic troubles prove most unbearable. As for the hour of greatest weakness, this is apparently from nine to twelve in the evening.—*British Medical Journal*.

Western Surgical and Gynecological Association.—This association will meet at Kansas City, Mo., December 28 and 29, 1905. The following program has been arranged: President's Address, by Dr. H. D. Niles, of Salt Lake City; "Extra-Uterine Pregnancy, with Report of a Case," by Dr. J. W. Andrews, of Mankato, Minn.; "Tuberculosis of the Tendon Sheaths and Bursae," by Dr. J. Clark Stewart, of Minneapolis, Minn.; "Tuberculous Glands of the Neck," by Dr. Daniel N.

Eisendrath, Chicago, Ill.; "Tuberculous Peritonitis," by Dr. T. E. Potter, of St. Joseph, Mo.; "Gunshot Injuries," by Dr. George Goodfellow, of San Francisco, Cal.; "A Plastic Operation for the Permanent Relief of Cicatricial Talipes Calcaneus," by Dr. A. F. Jonas, of Omaha, Neb.; "Loose Bodies in the Elbow Joint," by Dr. T. P. Livingston, of Plattsmouth, Neb.; "Ideas Concerning the Management of Appendicitis Based upon One Thousand Operations," by Dr. VanBuren Knott, of Sioux City, Ia.; "Modern Methods of Dealing with Appendicitis in Its Various Stages," by Dr. C. H. Wallace, of St. Joseph, Mo.; "Appendicitis, with Further Reports from Physicians Who Have Suffered from the Disease," by Dr. I. B. Perkins, of Denver, Colo.; "Spinal Injuries," by Dr. A. L. Wright, of Carroll, Ia.; "A Consideration of the Technic of Laminectomy," by Dr. Harry M. Sherman, of San Francisco, Cal.; "The Free Interval in Intra-Cranial Hemorrhage," by Dr. F. Gregory Connell, of Salida, Colo.; "Chylous Cysts of the Mesentery," by Dr. Miles F. Porter, of Fort Wayne, Ind.; "Fractures of the Elbow Joint," by Dr. W. D. Haines, of Cincinnati, O.; "Treatment of General Peritonitis," by Dr. Donald Macrae, Jr., of Council Bluffs, Ia.; "The Principles Involved in Peritoneal Drainage," by Dr. R. C. Coffey, of Portland, Ore.; "Conservatism in Post-Operative Treatment," by Dr. S. C. Beede, of David City, Neb.; Paper by Dr. Jabez N. Jackson, of Kansas City, Mo.; Paper by Dr. Charles H. Mayo, of Rochester, Minn.; "Preoperative Thrombi in the Region of Field of Operation as a Cause of Post-Operative Complications and Death," by Dr. A. W. Abbott, of Minneapolis, Minn.; "Dangers of Accidental Traumatism to the Uterus during Operation," by Dr. Charles A. Stewart, of Duluth, Minn.; "Dyspepsias Amenable to Surgical Treatment," by Dr. Wm. E. Ground, of Superior, Wis.; "Drainage of the Male Pelvis," by Dr. Wm. Jepson, of Sioux City, Ia.; "The Plastic Surgery of the Trachea," by Dr. A. I. Bouffleur, of Chicago, Ill.; "Undescended Testicle," by Dr. A. E. Benjamin, of Minneapolis, Minn.; "Some Observations on Renal Surgery," by Dr. D. W. Basham, of Wichita, Kan.; "The Choice of Ligature and Suture Material for Abdominal Surgery," by Dr. H. G. Wetherill, of Denver, Colo.; "Carcinoma of Colon," by Dr. W. W. Grant, of Denver, Colo.; "Traumatic Displacement of a Kidney which Subsequently Became Adherent to the Pelvis and Infected, Necessitating Nephrectomy," by Dr. G. G. Cottam, of Rock Rapids, Iowa; "Pathology and Treatment of Hallux Valgus," by Dr. A. E. Halstead, of Chicago, Ill.; "Report of a Case of Gluteal Artero-Venous Aneurism," by Dr. J. E. Summer, Jr., of Omaha, Neb.; "The Symptoms of Spinal Disease," by Dr. S. C. Baldwin, of Salt Lake City, Utah; "The Effects of Osmic Acid Injections Upon the Tissues," by Dr. Joseph Rilus Eastman, of Indianapolis, Ind.; "Transvesical Operation for the Relief of Prostatism in the Aged Male," by Dr. Charles E. Bowers, of Wichita, Kan.

Medical Terms in the "New English Dictionary."

—Although carrying the alphabet only from Pennage to Pfennig, the present part of Dr. Murray's great dictionary contains a host of words which have an interest for the medical man, according to the *British Medical Journal*. There is, for instance, the group of the *peri's*, from *peri-adventitial* to *peri-vitelline*, and from *pericementum* to *peri-visceritis*. Among these we meet with the names for all the inflammations surrounding organs, such as *periadenitis*, *perimetritis*, *perinephritis*, *periphlebitis*, and the less familiar *pericowperitis*, as well as a large number of anatomical terms, such as *pericardium*, *pericranium*, *perichondrium*, *periosteum*, *periotic*, and

peritoncum. Some of the *peri's* would puzzle most medical men to define; there is *periapt*, which means a charm or amulet against a disease (one of the illustrative quotations speaks of "a spider sewn up in a rag and worn as a periapt about the neck to charm away the ague"); there is *perisystole*, the short interval of time between the systole and the following diastole of the heart; and there is *pericystomatitis*, the inflammation of the surrounding membrane of an ovarian cystoma. *Period* has now its special meanings in connexion with intermittent fever and the menstrual function, but formerly it referred to the time during which a disease ran its course; thus, an eighteenth-century Lexicon defines it as "the Space in which a Distemper continues from its Beginning to its Declension, and such as return after a certain Space with like Symptoms are called Periodical Distempers." *Perkinism* was a method of treatment introduced by the American physician, Elisha Perkins, for the cure of rheumatic diseases, and it consisted in drawing two small pointed rods—one of steel and one of brass—called metallic tractors, over the affected region. Perkins died in 1799, but *Perkinism*, or *traction* (as it was called), evidently lived a little longer (perhaps still lives under other names!), for in 1803 a book was published with the title *Terrible Tractoration: a Poetical Petition Against Galvanizing Trumpery and the Perkinistic Institution*. Other interesting words are *Pest* and its associates (*Pest-house*, *Pestiduct*, *Pestiferous*, *Pestifugous*), and *Pestilence* and its derivatives. *Pest*, at first, meant any deadly epidemic disease, but came to mean the bubonic plague, especially in Scotland in the sixteenth and seventeenth centuries. A quotation from the history of John Knox says: "Within the Castell was the pest, and diverse thairin dyed." The curious obsolete word, *Pestiduct*, meant a channel of the plague or of any infectious disease. *Pestilence* has similar meanings. *Pestilence wort*, which once had a reputation as a cure for the plague, is the Butterbur, *Petasites vulgaris*; *Pestilential Fever* is an old name for typhus. The *Pestle* is a word specially interesting to the compounder of drugs, and is derived from *pinsere*, to pound or bruise. "His medical science," wrote Washington Irving in his book on Goldsmith, "could not gain him the management of a pestle and mortar." *Petit-mal*, meaning a mild form of epilepsy with abortive or incomplete fits, is a recent introduction into the English language (1878), and is, according to Dr. Murray, not yet naturalized. *Pennyroyal* has long been esteemed for its medicinal virtues, but few people probably have any notion that it has nothing to do with the coin of that name, but is derived from pulegium, thyme, and "real," royal. *Pepsin*, *peptone*, *peptotoxin*, *percussion*, *pertussis*, *pessary*, *petechia*, and many other medical words, or words used in a medical sense, are defined, and appropriately and copiously illustrated by Dr. Murray; and all students and admirers of his work can only thank him and his co-workers for another part of the invaluable Oxford English Dictionary.

Report on Plague in Calcutta.—The official report on plague in Calcutta for the twelve months ended June 30, 1904, by Dr. T. Frederick Pearce, officiating special health officer, with appendices by Dr. W. C. Hossack and Dr. H. M. Crake, has only recently been issued. The method and care with which this report has been drawn up is highly creditable, says the *Lancet*, to the medical officers concerned and is of considerable value epidemiologically. The opportunity of studying a recurring epidemic disease during the "quiescent" periods and watching its development and decline during the "active" periods of its course is a unique experience in medicine, but it is one which has been taken full ad-

vantage of by Dr. Pearse and his staff. The most striking feature of plague in Calcutta, as in other parts of the world, is the persistency of the seasonal recurrence. It is not only known, for instance, that plague in Calcutta will reach its maximum development during the month of April and its fall to a minimum level in July, but the very weeks during which these limits are attained recur year after year with notable regularity. The coterminous appearance of plague in rats and man is confirmed by the observers in Calcutta to a striking degree. In the month of January of each year the mortality in rats increases and cases of plague of the bubonic type reappear in man about the same time. In the report this fact is merely placed on record. Speculation as to the relationship of the disease in rats to the infection of man is withheld; there is undoubtedly wisdom in this, for unless distinct and experimental proof for or against direct infection from rats is to hand it is useless to reopen this much-discussed subject. The type of plague during the "quiescent" period—*i.e.*, during the season when the disease is more or less of a sporadic character—differs to some extent from that encountered during the period of "active" outbreak. This point is especially dealt with by Dr. Hossack. With the approach of the active period the bubonic type prevails and increases as the outbreak waxes in virulence. With the wane of the outbreak the bubonic type of the disease diminishes, and is rare or altogether absent during the quiescent stage. Cases of illness during the quiescent period are in danger of being returned as plague when in all probability they are due to other causes and so conclusively has this been shown to be the case that there are probably many more cases notified to be plague than actually occur. Dr. Hossack is so impressed with this possibility that he states that "in fact, it seems to me that for a period of two or three months the city is practically free from plague." With, however, the utmost care on the part of the medical staff, exact computation of the actual number of plague cases in Calcutta under the present system of registration is impossible. When a death is reported the medical inspectors are dependent on the history of illness given by the friends of the deceased, whether the patient suffered from plague or not. As the majority of the cases are not seen alive and most of the dead are buried without post-mortem examination, it will be seen that all cases of plague are not, and cannot be, examined bacteriologically. In this way errors arise, so that the notification of disease, even with a full and competent staff of plague workers, must in a large native city always be incomplete. The case mortality from plague, whatever the season, stands at over 90 per cent., and it is actually computed to be higher during the quiescent than during the active period of the disease. The chairman of the corporation of Calcutta states that "the operations of the plague department caused no excitement or agitation. The upper middle class people are pleased at the removal from their neighborhood of insanitary bustees (dwellings), which they regard as a sanitary danger to themselves, while the compensation paid to individual hut-owners is amply sufficient, more especially as the hut-owner is allowed to retain the materials of his hut. No objection is raised against disinfection in Calcutta."

OBITUARY.

Dr. ABISHA S. HUDSON, eighty-six years old, died October 10, at Mount Vernon, Ohio. He founded Keokuk Medical College and contributed much to medical science.

Dr. MORRIS WIENER, physician, playwright and novelist, died in Baltimore, Md., last week, aged ninety-four

years. Dr. Wiener was a prolific writer, and one of his plays had the honor of presentation before German royalty.

Dr. VERNON C. CULPEPPER, of Portsmouth, died at Norfolk, Va., of paralysis. He was fifty-two years of age and belonged to a family of distinguished physicians. He leaves a widow, a son, Dr. James Culpepper of the University of Virginia, and a daughter, the wife of Dr. Stanley Graves, of Norfolk.

Dr. STEPHEN LETT, one of the founders of the Guelph Homewood Sanitarium, and over which he had charge up to 1901 when he was attacked with paresis, died in that institution on October 11. He was born in Ireland, in 1847, but took his medical course at Toronto University, from which institution he was graduated in 1879.

Dr. ELIZABETH IRWIN, of No. 153 East Forty-seventh Street, New York, whose charitable advice among the poor persons of her acquaintance extended through the years of her practice, died last week from the effects of an operation performed three weeks ago. Dr. Irwin was a graduate of the Eclectic Medical College in 1890. She was associated with the Eclectic and Beechonian dispensaries.

Dr. THOMAS ADDISON JENKINS died last Wednesday of consumption, at the home of his father, Dr. Joseph A. Jenkins, 271 Jefferson Avenue, Brooklyn, in his thirty-third year. He contracted the disease six years ago while taking a post-graduate course in the Nursery and Children's Hospital, Manhattan, and vainly battled against it by a four years residence in Denver, Colo. He was a graduate of Princeton College and Bellevue Medical College, and was unmarried.

DEATHS IN THE PROFESSIONS ABROAD.—Among the members of the medical profession in foreign countries who have recently died are Dr. Edward Sas Korczynski, Professor of Medicine in the University of Cracow; Dr. Ludwig Winternitz, Physician to the Rudolfstiftung Hospital, Vienna, aged fifty-two years; Surgeon-General H. Schafer, Director of the Charite Hospital, Berlin, aged sixty-five years; Professor Alfred Schaefer, of the Anatomical Institute of the University of Breslau; and Dr. Kohlschutter, Professor of Internal Medicine in the University of Halle.

Dr. FRANK BULLER, a noted oculist and aurist of Montreal, died in that city on October 11, aged sixty-one years. He was professor of ophthalmology and otology in the medical department of McGill University, a position he had held since 1883. He was a member of the Ophthalmological Society of America, and a life member of the Ophthalmological Society of the United Kingdom. He was graduated in 1869 from Victoria University, then situated at Coburg, Ontario, and was for seventeen years ophthalmologist and aurist at the Montreal General Hospital, which he resigned a few years ago to accept a similar position on the Royal Victoria Hospital.

SPECIAL ARTICLE.

THE HERTER LECTURES ON DIABETES.^{1 2}

BY PROF. CARL VON NOORDEN,
PHYSICIAN-IN-CHIEF TO THE CITY HOSPITAL, FRANKFORT-A.-MAIN,
GERMANY.

FIRST LECTURE, OCTOBER 9, 1905.

In studying diabetes mellitus one is confronted with an extraordinary number of new problems. In this disease is to be recognized a chronic condition which

¹ Abstract of Course of Lectures on Diabetes Mellitus.

² Delivered before the University and Bellevue Hospital Medical College, New York.

is far different from the temporary glycosurias, although the causes of both may be the same. Besides the ordinary alimentary glycosuria, there is a form occurring during lactation, in which the excessive amount of milk sugar formed is taken up by the blood and excreted by the kidneys. In every 1,000 parts of the blood there is one of sugar, most of which is grape sugar. It is probable that the greater part, if not all, is in loose combination with albuminates in lecithin. This combination is of important physiological significance, sugar itself being rapidly diffusible, while the compound is not so. There is a choice of any one of three theories to explain the origin of diabetes: (1) An abnormally loose combination of sugar in the blood; (2) a loss in the impermeability of the kidneys to sugar; and (3) an abnormally rich amount of sugar in the circulating blood.

The first two are of minor importance. The hypothesis of Kolisch assumes that there occurs in the blood a combination of grape sugar and lecithin, which he terms jecorin. To this the kidneys are impermeable. In diabetes there is an abnormal amount of free glucose in the blood, dependent on an insufficient fixation. The theory has been abandoned, but it has not yet received its death-blow, and is capable of overhauling and revival. In considering the alterations in the permeability of the renal filter, one first thinks of the glycosuria following the administration of phloridzin. This continues as long as the drug is administered. Death may occur from the great loss of sugar, with symptoms of diabetes. But the difference between the true diabetes and phloridzin glycosuria is that in the former the sugar-content of the blood is above normal, while in the latter it is less than normal. Diseased kidneys react more slowly to the administration of phloridzin, also excreting less sugar. It is undecided whether phloridzin diabetes is due to a greater permeability of the kidneys or to an increased excreting activity of the renal epithelium. Diuretin and caffeine also produce glycosuria, but do so in a different manner, acting only in the presence of a diet rich in sugar, and a subsequent hyperglycemia. Of late an attempt has been made to distinguish a form of renal diabetes due to diminished permeability of the kidney from disease. But in fact when chronic nephritis complicates a case of diabetes the intensity of the glycosuria diminishes. It is now generally recognized that hyperglycemia is the real cause of diabetes. The kidney is only permeable to sugar when the percentage of the latter in the blood is above certain limits. According to recent observation the limit is 1 to 1,000. In diabetes the proportion is about 3 to 1,000, and may reach 7 to 1,000. Hyperglycemia occurs in all kinds of glycosuria, with the exception of that due to phloridzin. There is, however, no exact numerical relationship between hyperglycemia and glycosuria, as shown by Pavy, Naunyn and myself. One may even have a high sugar-content in the blood and a low content in the urine. In the beginning of diabetes there is a pronounced glycosuria without a pronounced hyperglycemia, but in the later stages of the disease an apparent compensation of the kidneys occurs, and hyperglycemia is apt to be more pronounced. The experimental glycosuria produced by Claude Bernard's puncture of the floor of the fourth ventricle lasts for several hours, at the end of which time the glycogen has disappeared entirely from the liver and almost so from the muscles. The

most important fact in connection with this form of glycosuria is that the source of the sugar is the glycogen in the liver and muscles, whether or not the vaso-motor nerves are the means of the transformation. Besides puncture of the fourth ventricle, other causes lead to the same form of glycosuria. They are injuries to the nervous system, narcotics, caffeine, throbromine. There are cases that may be excited by colic, or by the administration of nitrobenzol, phosphorus, etc. It has been contended that these are cases of masked diabetes. The neurogenous form is different from the ordinary variety, in which there are different types, benignant or malignant, acute or chronic. It is doubtful if real diabetes is related to the nervous form of Claude Bernard.

There are a large number of interesting points connected with the subject of alimentary glycosuria. The excessive ingestion of sugar, if occurring slowly, leads to the formation of fat; if rapidly, to the excretion of the excess of sugar in the urine. What are the limits for the ingestion of carbohydrates without the production of glycosuria? For starch there is no limit. Even if 400 gms. are taken in twenty-four hours no glycosuria results. The reason for this is that the digestion of starch takes place so slowly that the storage power of the liver keeps pace with it. The limit for glucose is 200 gms.; for levulose, 140-160 gms.; cane sugar, 150-200 gms.; milk sugar, 120 gms.; many people cannot take even 60 gms. of the latter without its appearance in the urine. As regards maltose, the intestine splits the greater amount into glucose; a ferment in the blood splits the rest. Some persons can tolerate all kinds of sugar but maltose. A large quantity of this is contained in beer. This explains the frequent occurrence of glycosuria in beer-drinkers, on account of the deficiency in the maltose-splitting ferment. The pentoses have a low limit; when 30-50 gms. are administered almost half appear in the urine. A few people regularly excrete pentose, although they take none of this or of its precursors in their food. Pentosuria, which is frequently a family peculiarity, is due to some metabolic anomaly, and is of practical importance from the fact that it may be confounded with ordinary diabetes. The above represent forms of physiological alimentary glycosuria, which is more apt to occur in certain diseased conditions. In the normal individual if 100 gms. of grape or fruit sugar dissolved in tea are taken as a test breakfast, none will appear in the urine. But glycosuria will occur after this test breakfast in certain nervous diseases, in temporary disorders of the pancreas, and in liver diseases. The first class include neuresthesia, acute diseases of the brain, paralyses, etc. It is supposed that in all these cases the "sugar center" in the medulla is in a condition of increased excitability, as the result of which the liver cells cannot store up sufficient sugar in the form of glycogen. The second group are the result of sub-normal conditions of the pancreas, by virtue of which the glycogen-storing capacity of the pancreas is likewise impaired. The alimentary glycosurias occurring in severe febrile diseases and in alcoholic intoxication, indicate a toxic disturbance of the pancreas. The alimentary glycosuria of acute infections differs in essential points from that associated with liver disease; it is more marked; of the 100 gms. ingested, ordinarily 2 to 5, and sometimes 10 to 20 grams of sugar appear in the urine. In alcoholism and fever one has to do with a dis-

turbance of the pancreas just as in diabetes, but the former is of slighter degree, and the patient recovers from it. The alimentary glycosuria of Graves' disease may be the outcome of the relationship between the pancreas and thyroid, but since Graves' disease is followed by nervous disturbances, one may attribute the glycosuria to the latter. In the third class of cases one may recognize an "insufficiency hepaticque." In individuals suffering from liver disease, such as cirrhosis, atrophy, obstruction to biliary flow, it is easy to produce an alimentary glycosuria, particularly if levulose be administered, when of 100 grams fed, from 1 to 20 will be found in the urine.

SECOND LECTURE, OCTOBER 10, 1905.

The hyperglycemia and glycosuria of diabetes are the result of a diminution of the sugar metabolism. The defective formation of glycogen is the cause of the hyperglycemia. The amount of sugar used by the muscles is dependent upon the previous formation of glycogen. There are other pathological factors intimately connected with the production of hyperglycemia and glycosuria besides the disturbance in the storage of glycogen, for if it were only the latter there would be a decrease in the glycosuria by an increase of muscular work. But muscular work takes place at the expense of other materials besides glycogen, namely fats and proteids. In a diabetic who as the result of his usual daily work would consume the equivalent of 50 grams of sugar per day, the ascent of a mountain 600 meters high would cause the oxidation of 80 to 100 grams of carbohydrate. One would accordingly expect a great diminution in the glycosuria. But this is frequently little if at all reduced. It is erroneously stated in some text-books that the diabetic should take much exercise, so as to lessen the output of sugar. This may possibly occur in the mild cases, but does not in the ordinary cases. The combustion of sugar is not increased by muscular work. Food-stuffs are not assimilated as free molecules, but must enter into firm combination with the protoplasm of the cells. The assimilation of sugar does not take place until the polymerisation of glycogen from the hexoses has first occurred. In diabetes this important connecting link is wanting, namely, the fixation of glycogen in the cells. The tissues, and especially the muscles, of diabetics cannot utilize the carbohydrates because the sugar has not been transformed into glycogen. Levulose may be stored as glycogen even by diabetics, and is thus more thoroughly utilized than is glucose. Von Mering and Minkowski first established the fact that depancreatized dogs can form glycogen out of levulose, although not from glucose. The respiratory quotient, or ratio between the carbon dioxide given off and the oxygen taken in, is raised by a diet of carbohydrates or by exercise. In severe diabetes the quotient falls, showing that the carbohydrates pass unused to the working muscle. In diabetics fed on levulose the respiratory quotient rises, showing that the latter is partly utilized.

Three facts of great significance are observed after feeding diabetics with levulose, namely, a diminution of the glycosuria, a storage of glycogen, and a rise of the respiratory quotient. The most important peculiarity of the diabetic condition is that the liver and muscles have lost the capacity of taking from the blood circulating glucose and storing it up as glycogen. There is also a loss in the

capacity of burning up carbohydrates, for the natural fuel is glycogen and not glucose. The sugar remains in the blood-stream; hence the hyperglycemia and the glycosuria. The capacity possessed by diabetics of utilizing glucose is not unlimited. In severe diabetes this is lost. Sometimes in severe cases of diabetes there appears spontaneously in the urine besides glucose, levulose, even when the food contains neither levulose nor other carbohydrate. These cases are of grave prognosis. What is the explanation of this spontaneous levulosuria? In the healthy body, levulose is formed, but it has a brief existence, being readily converted into glucose. In severe diabetes this conversion may not take place. There are occasionally cases of spontaneous levulosuria with glycosuria. This condition must be placed in the same category with spontaneous pentosuria, and is evidently the result of the lack of a certain ferment in the body. The failure of diabetics to make sufficient use of grape sugar is much more serious. All carbohydrates go through the grape-sugar stage. On what does the deficient formation of glycogen depend? The answer to this question will solve the riddle of diabetes. One may first turn to the pancreas. The diabetics following complete excision of the pancreas has every feature of true human diabetes. The experiments originally performed on dogs by von Mering and Minkowski have since been performed with similar results on a large series of other animals, although in birds there are certain peculiarities. In these cases levulose is still utilized by the body to a large extent, and a large part of the sugar is formed from proteid. The symptoms are the same as those of the severe form of diabetes. If 20 per cent. of the pancreas is allowed to remain, only slight diabetes results, and then provided the diet contains carbohydrate. If over 20 per cent. of the pancreas is allowed to remain no diabetes occurs. Numerous hypotheses have been advanced to explain the origin of pancreatic diabetes: (1) The normal pancreas produces an internal secretion, the presence of which gives rise to the elaboration of the sugar in the blood. (2) Lépine maintained that the amount of glycolytic ferment in the blood diminishes after extirpation of the pancreas and in diabetes. It has been lately decided that Lépine's theory is not sufficiently accurate. There are glycolytic ferments in the blood, but their action is feeble. The difference between normal and diabetic blood is slight if any. It is a fruitless quest to seek in the blood the cause of diabetes. The tissues are the seat of the decomposition of sugar. (3) According to Cohnheim's hypothesis, neither the muscle-juice alone nor the pancreas alone brings about the decomposition of sugar, but both together cause glycolysis. The so-called "activator of the pancreas" furnished by the muscles is heat resisting. This theory has been shattered in my laboratory. If the muscle-juice is kept free from bacteria it will not activate the pancreas. (4) Von Noorden's theory: The pancreas supplies to the blood some substance, possibly a ferment, which builds up or breaks down glycogen. It might be an antiferment, preventing a too rapid destruction of glycogen. Which of these it is cannot yet be definitely decided. The fact that the diabetic can still form glycogen shows that it is a question of the formation of glycogen from glucose, and not of a too rapid destruction. Levulose will give a more stable form of glycogen. This hypothesis is a stimulus for future work. It differs from

those of Cohnheim and Lépine in that the latter are concerned with anomalies of glycolytic ferments, while the former is concerned with anomalies of glycogenic or diastatic ferments. It is not the breaking down of carbohydrates that is effected, but rather the synthesis. The disturbance of fat formation in pancreatic diabetes is a very important subject for consideration. If diabetes consisted only in a disturbance of the carbohydrate metabolism there would be no other untoward results than those seen in an individual fed on excess of carbohydrates. The removal of the pancreas not only prevents the oxidation of the carbohydrates, but also the formation of fat from the latter. The formation of fat from carbohydrates does not occur directly from glucose, but through the intermediation of glycogen. In severe diabetes the combustion of sugar and the formation of fat suffer together. In a considerable number of cases of diabetes in the beginning the sugar-consuming capacity is impaired, but the synthesis of fats continues. Under such circumstances the working cells are inundated by sugar, but cannot utilize it. Tissue-hunger results, with increased appetite and a large intake of food. There are other cases in which the capacity to disintegrate sugar and synthesize fat are both simultaneously impaired. This is the common form. There is another class of cases in which the combustion of sugar is at first not impaired, but not so with the synthesis of fats. There are cases of obesity without glycosuria, *i.e.*, cases of diabetes marked by obesity, the former developing later. These cases of obesity with super-added diabetes represent the common form of diabetogenous obesity. The hypothesis of von Noorden is supported by the views of Pflüger. The close connection between diabetes and obesity is not enigmatical. There are obese people who are theoretically diabetic, developing the glycosuria after as much as ten years. Some obese people exhibit a marked alimentary glycosuria on 100 gms. of glucose. They later show true diabetes. It is important to frequently test the urine of obese patients. As to the processes in the pancreas that underlie diabetes, in spite of numerous autopsies, the anatomical alterations in the pancreas in severe diabetes are exceedingly slight. In the past few years the conception has arisen that the pancreas consists of two independent glands, one furnishing the digestive secretion and the other consisting of solid ductless masses of cells, the islands of Langerhans, furnishing a substance essential for the metabolism of carbohydrates. Opie was the first to lay special stress on this fact. These two glands may degenerate independently of each other. The speaker has seen cases of severe diabetes in which the islands of Langerhans were not visibly affected. It is now gaining ground that the islands of Langerhans are only stages in the development of the glandular substance. It is too early to form a definite judgment. It is evident that severe disturbances of chemical functions may occur without impressing any change on the anatomical structure. The changes are really in the intracellular chemical mechanism.

(To be Continued.)

Anniversary at the Academy.—On November 2 an anniversary meeting will be held at the Academy of Medicine, to which all the practitioners of the city are cordially invited. Several interesting addresses are expected, among them one by Dr. A. G. Gerster.

SOCIETY PROCEEDINGS.

NEW YORK STATE MEDICAL ASSOCIATION.

Twenty-second Annual Meeting, held at the Academy of Medicine, New York City, October 16, 17, 18 and 19, 1905.

The President, J. Riddle Goffe, M.D., in the Chair.

FIRST DAY—OCTOBER 16TH.

THE session of Monday afternoon, October 16, was occupied with the reception of the reports of the Committees, including the President's report, and that of the Nominating Committee. The report of the Nominating Committee was adopted, and the following officers were elected for the ensuing year: President, Allen Arthur Jones, of Buffalo; Vice-President, Ernest Schmid, of White Plains; Treasurer, William G. Le Boutellier, of New York; Secretary, Charles I. Redfield, of Middletown. The Chairman of the Committee of Arrangements, F. W. Loughran, of New York; on Publication, Roy D. Carlyle, of New York; on Legislation, E. Eliot Harris, of New York; on Library, Alexander Lambert, of New York; on Public Health, Alvin A. Hubbell, of Buffalo; on the Nominating Committee, Wisner R. Townsend, of New York.

The revision of the By-Laws, which were proposed last year and, according to the constitution, were laid over until the present year to be acted upon, were adopted. A communication to the President showing that Dr. Everard D. Ferguson, of Troy, was ill and unable to attend the meeting, it was proposed that a telegram of condolence be sent to Dr. Ferguson, who has always displayed the most tireless and unselfish efforts for the good of the Association.

Under the head of New Business, two important matters of legislation were placed before the Society by the Chairman of the Committee on Legislation, Dr. E. Eliot Harris, of New York. He suggests that a bill be drawn up abolishing the office of coroner in New York, and another to establish a single examining board for all physicians who are to have the legal right to practise medicine in New York State. The existence of the present trio of boards leads to inevitable and unceasing attempts to secure further examining boards, for all forms of quackery to the no small annoyance of already existing medical institutions, and requiring constantly renewed efforts to keep them from slipping through the legislature owing to the use of influence of various kinds.

SECOND DAY—TUESDAY, OCTOBER 17TH.

Amalgamation Voted For.—The main subject for action at the business meeting on the morning of the second day was the question of amalgamation. After the statement by Dr. Wisner Townsend, the Chairman of the Committee having the matter of amalgamation in hand, Dr. Kauffman, of Onondago, declared that there now seemed to be no longer any reason for opposition to the amalgamation of the New York State Medical Association and the Medical Society of the State of New York. Last year it was on his appeal to the courts that amalgamation failed. As the result of that appeal, however, the medical societies of this State have been put on an even footing quite different from that which they occupied before. The delay was a source of annoyance, but has been of lasting benefit.

Dr. Bryant, the President of the Medical Society of the State of New York, and a former president of the State Medical Association, was then asked to address the meeting, and declared that the purposes that every

honest, zealous member of the New York State Medical Association desired would be accomplished after the amalgamation. There was no reason to think that in the absorption in the greater body there shall be any loss of professional dignity or professional enthusiasm and sense of duty. If Dr. Ferguson, who unfortunately is absent because of illness, were present, he would re-echo his sentiments, for he and Dr. Bryant have talked them over in recent months.

Dr. James G. Orten, of Binghamton, an ex-President of the Medical Association of the State of New York and a man who was enrolled as a member of the Medical Society of the State of New York some fifty years ago, said that he would be glad to be re-enrolled in the old medical society so rich in traditions of what it has accomplished for the profession of this State.

The resolution as to amalgamation was then put to the house, and as it would be necessary, for legal purposes when the amalgamation question comes before the courts, for a roll-call to have been held, this was the method of procedure. Altogether 1,814 members of the Association have a right to vote. Of these 1,517, either personally or by proxy, voted "Aye," or in favor of amalgamation. Two voted "Nay." Two hundred and ninety-five members did not vote at all. The roll-call took two hours and a half to complete, and is absolutely legal in its formality.

At the afternoon session Dr. Suzuki, the Surgeon-General of the Japanese Navy, was introduced to the Society, and it was promised that he would be present to make an address at the dinner on Wednesday night. In a few words he thanked the Society for their reception, and expressed his gladness at being present.

Reform in Army Medical Service.—Dr. Louis Seaman then arose to a question of privilege and asked to be allowed to present a set of resolutions. He said that it was appalling to think what would come to our country if it should become engaged in a serious war with any important power under the present conditions of our Army and Navy medical service. An example of what might be expected is to be found in the actual occurrences of the recent Spanish-American War. In that, fourteen men were sacrificed to disease and illnesses of various kinds for every one that was killed in battle. Recent figures obtained direct from the Surgeon-General's office in Washington confirms these statistics in every way. It is the system, however, that is at fault and not the men whose work is rendered negative by the old-fashioned régime under which they must work. [The resolutions that Dr. Seaman presented were adopted unanimously, in practically their present form, at the Military Congress held in St. Louis last year.]

Suggested Improvements.—It is suggested that the government be informed that according to a resolution of the New York State Medical Association, the Army medical service of this country should be improved, so as to make it the equal of that of the other great nations. In addition to this the resolutions ask that the subjects of sanitation and hygiene be made a part of the regular compulsory course at Annapolis and West Point, and that the Army and Navy cadets be asked to stand as severe an examination in them as in other branches, in order to obtain their necessary standing.

Presidential Address.—According to the new by-laws adopted by the Society at the first meeting for this year the President's address is placed on the afternoon of the second day, instead of at noon on the third day as heretofore. Accordingly, Dr. Goffe's address on medical organization was taken up.

Cooperation Needed.—Dr. Goffe declared that at the present moment all dependency of human effort is toward cooperation and concentration. Combinations of all kinds have taken place of the old-time competition that used to be supposed so necessary. The medical profession needs this cooperation more than others and yet has less of it. As it has been well expressed, there is need to cease to fear a fellow physician, but rather depend on him. With reunion in New York this will be still more easier than before. While the New York State Medical Association loses its name, the Medical Society of the State of New York adopts its organization. This method of organization, adopted first quietly in Connecticut and then in Alabama, was taken up and developed by the New York State Medical Association and then adopted by the American Medical Association. It makes the county the unit of organization. Just as in the State the family is the unit, so here those who are intimately in contact with one another are made the judges of the fitness for membership of each individual doctor. It is supposed that social features shall be a part of all the meetings, and this is provided for in the constitution.

Directory, Journal and Malpractice Defence.—Dr. Goffe said that these three features of the New York State Medical Association should be preserved. A medical directory does more to do away with fake degrees and false pretenses than any other simple method at hand. The journal can regulate the vexed questions of proprietary remedies, and in this matter New York should take a lead. Malpractice defense has proved a valuable feature. Malpractice suits are on the increase and insurance against them in insurance companies is worse than useless. Companies are conducted for the purpose of making money, and a settlement is often cheaper than to fight the suit. As a consequence the physician often has to pocket his disgrace and consequent loss of professional reputation. The causes for malpractice suits are ever becoming more trivial. One surgeon was sued recently for having given advice against the removal of a fibroid tumor. Another was sued because of pressure sores produced by a plaster-of-Paris bandage. Cooperative defense is the only remedy for this. If eighteen hundred members of the State Medical Association supported these features how much easier would it be for seventy-five hundred members of the united organization?

SCIENTIFIC BUSINESS.

The first paper of the scientific session was read by Dr. Morris Manges, of New York, on the abrupt onset of typhoid fever.

Frequency and Types of Abrupt Typhoid.—Dr. Manges said that the form of typhoid fever with abrupt onset is much more common than has been supposed, and as it is likely to be severe and needs treatment early it is necessary the diagnosis should be made at the earliest possible moment. Dr. Curschmann, of Leipzig, called attention to the whole subject of the abrupt onset of typhoid fever on the occasion of a rather sudden death in the royal family of Hesse not long ago. In Dr. Manges' experience and according to the records of Mount Sinai Hospital about 10 per cent. of all typhoid cases begin abruptly. This is, of course, not a new feature of typhoid fever, but has been known for a long time. Before the middle of the nineteenth century a French writer called attention to it, and it is of frequent mention in French articles on typhoid fever. Pepper and Stengel called attention to it in this country.

Causes of Abrupt Onset.—The causes of the sudden onset of the symptoms of typhoid fever in these

cases seems to be the silent progress of the bacilli until all resistance is overcome, when the organism gives way or a secondary infection which favors the course of the disease. There are two forms: the first is the genuine abrupt typhoid fever, and the second the apparently abrupt. These latter cases are the walking typhoid cases which are so much more common than they used to be thought and which frequently are not seen until hemorrhage or perforation or some other fatal complication has set in, and the treatment is hopeless. Because of these cases typhoid fever is classed in the English mortality records among the causes of sudden death. The real abrupt typhoid fever cases, however, show no symptoms at all until there is a fulminant giving way to a severe infection.

Types of Abrupt Typhoid Fever.—Cases of paratyphoid fever are usually of sudden onset and must be carefully distinguished from true typhoid fever. The most common type of sudden onset takes the form of typhoid meningitis. Sometimes it is extremely difficult to judge just what the meningitic symptoms are due to. Dr. Manges has found, however, that it is not so difficult to recognize the difference between cerebrospinal meningitis and typhoid meningitis if the leucocyte counts be made. In cerebrospinal fever the leucocyte count is high; in typhoid it is low. Pleurotyphoid and pneumotyphoid are often abrupt in onset. Not infrequently these are taken for tuberculous pneumonia. Pain is not an infrequent symptom of abrupt typhoid. This may be either of the abdominal or of the cranial variety. In the abdominal cases of pain there is likely to be a danger of mistaking the case for appendicitis. Usually, however, the temperature is higher than it is in appendicitis, and the pulse is lower. Sometimes it happens, of course, that these two diseases run together. The Widal reaction is the best possible diagnostic sign in these cases, but, of course, it is sometimes delayed so long as not to be of use. In one case seen recently the Widal reaction was present at high dilutions, but it was not present at lower dilutions. Two days after a consultation, at which it had been almost completely decided to operate, the rose spots of typhoid and the enlarged spleen were recognized.

Pain in the Head.—Typhoid fever always begins with a severe headache, but in some patients this becomes of so violent a character as to make the diagnosis of some local pathological condition within the cranium. Sometimes meningitis is suspected. In a case recently reported from a neighboring city the headache was so severe that some sinus trouble was suspected. A specialist was called who drained one of the frontal sinuses. No relief was afforded by this, however, and so on the following day the other frontal sinus was drained. Not long after some critical signs of typhoid fever developed.

High Temperatures.—Many of the sudden cases of typhoid fever develop very high temperatures. These are apt to be fatal; fortunately they are not very frequent. Cases with temperatures as high as 100° F. have been reported not infrequently. Dr. Manges saw one case not long since in which the temperature rose to 111° F. just before death. Typhoid fever of the hemorrhagic type is likely to be of abrupt onset and to be brief and fatal in character. It is sometimes mistaken for typhus fever. Sharp, hard chills at the beginning of typhoid fever occur in about 2 per cent. of the cases; usually there is some chilliness, but not a severe chill. Typhoid fever of the renal type is likely to be sudden and is not as hopeless as might be thought. In a recent case the illness was very sudden, the urine was full of albumin and presented many casts. It was considered

to be a case of nephritis with temperature. When the temperature came down, however, the urine cleared up. A relapse of the fever brought back the renal symptoms, and only then was the Widal reaction found.

Secondary Infections.—When grip and typhoid are combined the onset is likely to be sudden. Sometimes the patient seems to run through a regular attack of the gripe, and then develops a symptom of typhoid, but in some the typhoid declares itself at the beginning and runs a severe course. A laboratory worker who by mistake swallowed a culture of the typhoid bacillus had an attack of the disease with sudden onset just seven days later. Individuals who are under severe physical or mental exertion are likely to have their typhoid abrupt.

Predisposition to Sudden Typhoid.—Dr. Kohn, of New York, in opening the discussion said that in some people there was a predisposition of the symptoms, which marked the suddenness of the onset. In one case the patient had suffered from an obstinate headache for a long while, and this suddenly became so severe as to suggest meningitis. It is not easy to tell these cases of sudden onset, for the rosella is uncertain, the spleen may be too soft for palpation, or the tympany present may obscure its size. Even the tongue may not be that of characteristic typhoid. There is, however, something about the look of the patient that suggests a typhoid infection.

Dr. Stockton, of Buffalo, said that whenever typhoid fever selects a special organ for its attack, then the symptoms of its presence are almost sure to announce themselves suddenly.

Groups of Cases.—Dr. Moriarta, of Saratoga, said that in a recent group of cases of typhoid fever, seen in Saratoga, all of them were of sudden onset. The patients consisted of all the occupants of a hospital, four nurses, two orderlies and three patients. Many of them were attacked differently, but all of them had no prodromal symptoms. In two of the cases there was so much abdominal pain that they were thought to be appendical. One of them was decidedly hemorrhagic in character and ran a severe course. All of them had slow pulses. The pulse did not rise above 85, even with a temperature of 103° F.

Dr. Manges, in closing the discussion, said that the peculiar expression of these patients often suggest typhoid when there is no definite evidence for it. The Widal reaction is the best single symptom. At Mount Sinai Hospital they have never been misled by a positive Widal. It always has meant positive typhoid fever diagnosis.

Pseudo Rheumatism.—Dr. James J. Walsh, of New York City, read a paper on lumbago, sciatica and pseudo rheumatism. He said that the affections that served best to keep alive certain forms of quackery were the so-called chronic rheumatisms. Unfortunately the association of the word rheumatism leads to the use of the salicylates. Now these are coal-tar products and have a distinct tendency to cause deterioration of red blood cells and to inhibit the action of the blood-making organs. They will stop pain for a moment, but the later condition of the patient is worse than the former. Some old prominent politicians in certain States, treated in this way by regular practitioners, have finally gone to irregular practitioners of medicine of various kinds, and by means of massage, suggestion, liniments of various kinds and passive movements have been relieved. As a consequence they have been ready to use their influence with the legislatures of their States to obtain the passage of a law legalizing the passage of these irregulars. If the diagnosis of these cases were

properly made, often the rational treatment would at once suggest itself.

Lumbago and Sciatica.—Most of the chronic pains called rheumatism are connected with some occupation in which certain groups of muscles are used much more than others. For instance, tailors who stoop over and use their lumbar muscles, and heavy lifters as the laborers in iron foundries, are the most common subjects of lumbago. In these cases the presence of any toxin in the blood is likely to produce a condition of lowered nutrition in overused parts, which soon gives rise to fatigue and then to aches and pains. In sciatica it is the man who bends at the knee considerably, as, for instance, the shoveler, or the lifter who does not stoop over for heavy objects, but bends his knees and lifts in that position. Very many of these patients cannot continue at their occupations after they have passed a certain period of life. Their nervous and muscular system is not built in such a way as to permit them.

Toxic Conditions.—The presence of any toxin is likely to be reflected in the nerve, the muscles of which are most used. The painter gets his wrist-drop mainly because he uses his wrist in painting more than any other set of muscles in his body. The alcohol drinker of sedentary occupation uses certain muscles of his lower leg whenever he walks, and these are the first to suffer because practically the only severe exercise that he takes is that of carrying his own body by the nerve impulses sent through the lower leg. These considerations help to set the cases of so-called chronic rheumatism in the various categories of neuritis, occupation neurosis and incapacity to continue certain coordinate movements beyond a limited extent which is such a characteristic feature.

Dr. R. H. Gibbons, of New York, said that the salicylates do not prove so harmful to red blood cells if they are made directly from the willow and not from the coal tar. Salicin, for instance, produces none of the bad effects. In Dr. Gibbons' experience not a few of the so-called chronic rheumatisms are really due to infection by the gonococcus and must be treated from this standpoint.

Dr. Walsh, in closing the discussion, said that the salicylates made from the willow directly, or from coal tar, do not seem, according to excellent authorities, to differ from one another at all in their effects upon the human system. It should be remembered that only the amido-phenol derivatives were actively hemolytic.

Experience with Apomorphine.—Dr. George H. Peddle, of Perry, N. Y., said that some recent experience with apomorphine has made him consider it of great value in all convulsive conditions. This is especially true as regards to hysteria and strychnine poisoning. In two recent cases where young women who were pregnant had taken oil of tansy, with severe convulsive seizures as a consequence, the administration of a tenth of a grain of apomorphine had produced an excellent effect, and the pregnancies have not been interrupted. In a case of tetanus, in which it was tried, the convulsive features were much improved, but, in spite of this and the use of antitoxin, the patient died. Dr. Peddle considers that, except in severe cases, not more than one-twentieth of a grain of apomorphine should be employed.

Dr. Dunham, of Poughkeepsie, said that apomorphine can prove very distressing. In a recent experience he gave a tenth of a grain to a man suffering from alcoholism, and found him, a few minutes later, with cold sweat and pulseless. Too much of the drug may very easily be used.

Dysmenorrhea at Puberty and Its Relation to Uterine Tumors.—Dr. Frank Dewitt Reese, of Cortland, N. Y., said that in a number of cases in his experience uterine tumors have developed in young women who had difficulty with their menstruation from its very beginning. The irritation set up by the difficult menstruation seemed to predispose the uterus to the formation of neoplasms. He quoted a number of the qualities in medical literature who held this belief especially with regard to the origin of fibroids. It seems important, therefore, to try and correct this condition and not allow it to continue, with an idea that the patient will outgrow it, or that eventually matrimony should put an end to it.

Methods of Life.—Dr. Mary Gage Day said that there are two classes of sufferers from dysmenorrhea. Some of them suffer from the very beginning of their menstrual life; others suffer only after some indiscretion, and their pain is evidently due to an inflammatory condition. It may be considered that those with primary dysmenorrhea are sufferers from some failure of development of the genital tract. Undoubtedly many of the tumors have their origin in early fetal life. The presence of these, even in small size, may produce the underdevelopment and consequently the dysmenorrhea.

Dr. Robert T. Morris, in the discussion, said that where dysmenorrhea exists all forms of peripheral reflexes should be remedied. Eye-strain is the cause not only of headache, but often of ovarian neuralgia and a tendency to dysmenorrhea. For these the ophthalmologist is needed, but in the same way every kind of possible source of irritation must be removed.

Typhoid Fever in Children.—Dr. Louis C. Ager, of Brooklyn, said that in recent years it has come to be generally recognized that typhoid fever is not nearly so rare in children as used to be thought. During the recent epidemic of typhoid fever in Brooklyn he has had the opportunity to see the disease in a number of children. The course of the affection is not like that in the adult, except that the onset usually seems to be more abrupt and the disease is inclined to run a shorter course. He has not had enough cases to make a serious generalization from, but considers that these features are the most prominent. Two things are of assistance in the diagnosis. These are the early presence of the Diazo reaction and the presence also of an early positive Widal reaction. In this last particular he differs from the opinion expressed by other observers, but this is certainly the result of his experience.

(To be Continued.)

AMERICAN ROENTGEN RAY SOCIETY.

Sixth Annual Meeting, held in Baltimore, Md., September 28, 29, 30, 1905.

The President, Charles Lester Leonard, M.D., of Philadelphia, in the Chair.

Study of Stomach and Intestines.—Dr. Henry Hulst, of Grand Rapids, Mich., spoke of the value of the Roentgen Ray in the diagnosis of diseases of the stomach and intestines, especially in dilatation and dislocation of the stomach. These organs may be inflated, but inflation is often painful, dangerous and inadequate. The best method is to give one ounce of bismuth in a pint of milk, or bread and milk or potato soup. Then two exposures are made: one in the erect and one in the recumbent posture. If the first radiograph was made at noon, a second is taken at six, nothing having been taken into the stomach in the meantime. Thus it is possible to

ascertain the size, position and functional capacity of the stomach. If a good picture of the colon is not obtained in this way, three ounces of bismuth may be injected per rectum. It is essential to have the patient at rest. There must be no breathing, and as little peristalsis as possible. If the subject is very fat, it may be necessary to intensify the screen. This is not particularly objectionable with a sixteen-inch coil, a Wehnelt interrupter and a strong tube placed twenty inches from the skin surface. A plate can easily be made under these circumstances in a medium-sized subject in one second; without the intensifying screen, in three seconds. Ordinarily he has found it better to make the exposure at twenty inches in ten seconds without intensifying screens. Good apparatus and a fair degree of skill is sufficient to secure fairly satisfactory results. The diaphragm is quite indispensable.

Skeletal Development.—Dr. P. M. Hickey, of Detroit, Mich., showed slides demonstrating the bony development of the elbow joint, and emphasized the importance of comparing the injured with the uninjured joint before attempting to make a diagnosis of fracture because the crevices in a developing joint may easily be mistaken for fracture when it really does not exist.

Dr. J. Rudis-Jicinsky, of Cedar Rapids, Ia., said that the anatomy of joints, as given in text-books, should be revised to agree with the Roentgen ray findings as demonstrated by Dr. Hickey.

Dr. Henry Pancoast, of Philadelphia, said that fractures of the head of the radius are far more common than is usually supposed, although only a few cases are recorded in the literature. He has had twenty cases.

Interpretation of Lung Negatives.—Dr. Geo. E. Pfahler, of Philadelphia, said that in order to study the lungs satisfactorily the negative must be made while these organs are at rest. A careful physical examination should precede the Roentgen examination to enable the radiographer to make a correct interpretation of shadows. The greatest field of usefulness of the Roentgen ray in lung diseases is in the study of tuberculosis. Besides assisting in making a diagnosis, it is a most valuable and correct method of recording the lesion at the various stages of the disease. The plate is placed behind the patient, and a second plate in front of the patient so as to give proper value to lesions lying near the surface and to recognize any thickening of the pleura. The patient is placed in the recumbent posture, except when a pleural effusion is suspected, when the patient is placed in the sitting posture. The tube is placed at a distance of 18 to 20 inches from the plate. The time of exposure will vary with the time that the patient can hold his breath. This time should be determined by testing the patient several times before attempting to make an exposure.

Dr. Henry Hulst, of Grand Rapids, Mich., has found that macroscopic lesions of the lungs show very well, also old lesions, but not recent lesions. He never exposes a chest for more than one second in order to get the detail of soft tissues. When lesions are present that the Roentgen ray can record, the diagnosis is positive. A negative diagnosis is only of relative value. It does not exclude the existence of tuberculosis.

Dr. M. K. Kascabian, of Philadelphia, said that by means of stereoscopic pictures it is possible to distinguish consolidation from pleural thickening and from cavitation. It is better to take the picture

with the patient lying on the side and not on the back.

Diagnosis of Aneurisms.—Dr. Frederick H. Baetjer, of Baltimore, gave the points in diagnosis between aneurism and dilatation of the aorta. A pulsating shadow which does not disappear between pulsations is always suspicious. By means of the Roentgen ray a diagnosis of aneurism can be made earlier than by any other method, and the treatment can be begun earlier and it can be planned more intelligently; hence the results are better. Before proceeding with the Roentgen ray examination, the patient should be examined carefully to exclude physical deformities of the chest and spine. The patient is then placed with his back to the tube, the tube being placed at the level of the third rib, and from 20 to 24 inches from the skin surface. A second picture is made from in front. By means of transverse or slightly transverse illumination it is often possible to tell whether the object seen has its attachment in front or behind. This is especially important in determining whether the aneurism springs from the ascending or descending portion of the aorta. By making the examination at two different levels, the composite picture is a true one.

Dr. P. M. Hickey, of Detroit, has found that the most disastrous results followed the disregard of the Roentgen ray diagnosis of aneurism. When mistaken for tumor, an operation always proves fatal.

Presidential Address.—Dr. Charles Lester Leonard, of Philadelphia, reviewed what has been accomplished with the Roentgen ray since its discovery ten years ago, discussed its application in medicine, and indulged in a speculative discussion of the identity of the ray, its chemistry and physiologic action. He said that improvement in technic and better knowledge of the action of the ray and its application will advance its usefulness.

Regulation and Measurement of Therapeutic Dosage of Roentgen Ray.—Dr. E. G. Williams, of Richmond, Va., said that the more superficial the effect desired, the closer the tube should be placed to the skin surface. He has found that about ninety minutes are required to produce an erythema on the surface, with a tube distance of ten inches, spark gap four inches equivalent to the resistance in the secondary circuit, and the milliammeter showing three fourths of a milliamperé. The safety limits are about thirty per cent. less than the number of minutes required to produce a decided erythema. The law of inverse squares helps in regulating the length of exposure and the distance of the tube from the surface. The closer the part is to the tube, the greater is the difference in the effect on the skin and the parts beneath, and inversely, the farther the part is from the part the less is the difference between the effect on the skin and the part beneath. His rule is not to expose in ten days more than the number of minutes required to produce a dermatitis. He usually gives treatments in series of four to six exposures each, in which the sum total number of minutes equals the number of minutes required to produce the desired effect. The tissue is also effected in proportion to the relative number of cells it contains. To measure and record a dose of the Roentgen ray there should be noted the duration of the exposure, the distance of the surface from the platinum disk, the equivalent spark gap and the reading of the milliammeter.

Dr. M. K. Kascabian, of Philadelphia, described

the means adopted by French and German Roentgenologists for determining the dosage of the Roentgen ray, such as the use of fluorescent paper and capsules containing a fluorescent substance.

Technic of Roentgen Treatment of Keloids.—Dr. O. Shepard Barnum, of Los Angeles, Cal., advised using a great abundance of rays from a tube of rather high resistance, and excited by a large coil. That means good penetration and differentiation. The tube should be at least six inches in diameter, and it must have good penetration and not be lacking in definition. He uses a ray which will show the bones in the hand at twelve feet distance. He said that it is better to have the tube too high than too low. The tube distance should be from fifteen to twenty inches, with an exposure of fifteen to twenty-five minutes on alternate days for eight to ten treatments. Then rest ten days or until convinced that there is no dermatitis. Then repeat the process until the tumor has disappeared entirely. The treatment should be pushed for three to six months, and then tapered off until every vestige of the tumor has disappeared.

Present Status of Radiotherapy.—Dr. Gordon G. Burdick, of Chicago, said that there is no longer any question as to the specific field of the Roentgen ray in all forms of acne, lupus, eczema, psoriasis, pruritus, tinea, sycosis, mycosis, mycosis fungoides, senile keratosis, venereal condylomata and hyperidrosis. Among the skin diseases that may be classed as erratic are lupus erythematosus, pigmented vascular nevi, hypertrichosis and acne rosacea. Of the first mentioned about 18 per cent. are cured and about 30 per cent. are improved. He has treated 80 cases of epithelioma involving the skin only, with no recurrence. When the tumor is situated at a mucocutaneous junction it is well to have the glands removed after a period of quiescence has been brought about by the X-ray. He followed this method in 23 cases, with no recurrence after two years. He considered the Roentgen ray sufficient treatment in the great majority of cases. The knife should be used only in such cases where the tumor is situated favorably for radical removal. In cases having the characteristic odor, he invariably anesthetizes the surface, and by means of the galvanic cautery drives into the tissue for a prolonged period of time zinc and mercury ions, following with the Roentgen ray after the separation of the slough. Eighteen cases of carcinoma, treated vigorously with the Roentgen ray, were cured. In fourteen, the tumors and enlarged glands disappeared completely; in four, they ceased growing. All primary cases should be rayed, excluding the knife. He does not believe in the existence of a case of sarcoma that cannot be markedly benefited by a prolonged, mild radiation from an old hard tube, well coated with aluminum, the thickness depending on the individual circumstances existing in the individual case.

Treatment of Carcinoma.—Dr. Geo. C. Johnston, of Pittsburg, said that in carcinoma of the breast the application of a ray of sufficient intensity, for a sufficient length of time, is capable of causing a disappearance of the tumor and carcinomatous cell nests and their replacement by connective tissue, a proliferative, obliterative endarteritis and a sclerosis of the lymph vessels and glands leading from the affected part. A course of radiation not to exceed ten treatments of twenty minutes each, at a tube distance of eighteen inches, is sufficient in the majority of cases to accomplish the desired re-

sult. A tube of fairly low vacuum should be employed, carrying a current not to exceed $2\frac{1}{2}$ milliamperes. On about the fifteenth day after operation postoperative treatment should be begun. Cases of extensive carcinoma may be rayed, operated, rayed again and freed from the disease, providing the surgeon and the roentgenologist co-operate thoroughly. Postoperative radiation is made directly over the wound through the dressings, the length of each exposure being ten minutes; treatment being given every other day for as long a time as may be necessary.

Late Results in Treatment of Sarcoma.—Dr. Wm. B. Coley, of New York, said that facts, up to the present time, fail to show that the Roentgen ray is curative of malignant growths, except those that are located superficially. No patient has yet remained free from a local or general recurrence for three years. The value of postoperative treatment is undetermined. The treatment of sarcoma by the Roentgen ray has shown, in a small proportion of cases, that the tumors decrease in size and even disappear in a few instances. In the small percentage of cases in which the tumor has disappeared, the universal tendency to recurrence and the danger of dissemination of the growth is sufficient reason for not advocating the method, except in inoperable or recurrent cases.

Dr. J. Rudis-Jicinsky, of Cedar Rapids, Ia., believed that the use of Coley's antitoxin precipitated the occurrence of metastases. Drs. Bowen, Stevens, Burdick and others reported favorable results in the treatment of sarcoma with the Roentgen ray.

Dr. Vernon J. Willey, of Ann Arbor, Mich., treats his patients for two to four weeks prior to operation, using a hard, low tube incased in a Friedländer shield, with good result. One case treated entirely with the ray recovered after 42 treatments, with no recurrence a year later.

Roentgen Ray in Carcinoma.—Dr. Geo. H. Stover, of Denver, uses a ray of good mellow quality that will penetrate the tissue. The ray may be allowed to affect the surrounding tissue to a reasonable distance, but should not be placed too near the skin because of rays close to the wall of the tube that are of high destructiveness. All healthy parts should be protected. He rays three times a week for ten minutes each time, tube distance being eight to ten inches. He uses shields on all treatment tubes. He advised Roentgen ray treatment of primary, non-operative and recurrent non-operative carcinomas. Where there is an equal chance between Roentgen and surgical measures, advise operation and ray afterward.

Roentgen Ray in Military Surgery.—Dr. C. F. Stokes, U. S. N., described the equipment employed in naval hospitals and on board ship, and cited a number of cases in which the Roentgen ray was used to good advantage.

Treatment of Leucemia.—Dr. J. F. Smith, of Chicago, added two cases to ten previously reported, and reviewed the results obtained in the entire series. The action of the Roentgen ray seemed to be of two kinds: the local influence on the spleen and glands characterized by inflammatory reaction, if treatment is pushed vigorously, and later by the breaking down and disintegration of gland tissue, and the formation of leucotoxin which either has an inhibitory action on the manufacture of leucocytes by the bone marrow, or it destroys the leucocytes already formed. In no case did the splenic tumor disappear entirely.

With a discontinuance of the Roentgen ray, the disease, at varying periods, returns. Acute cases are not benefited at all by the treatment. Chronic cases respond more rapidly than subacute cases. The probability is that the ray holds the disease in abeyance, but does not cure the patient.

Roentgen Treatment of Hodgkin's Disease, Leucemia and Polycythemia.—Dr. Henry Pancoast, of Philadelphia, emphasized the necessity of careful study of the effects of Roentgen ray exposures on metabolism, particularly in connection with the treatment of the diseases under discussion. He has found that the effects of the Roentgen ray on leucemic tissue are not the same as those on the skin in an X-ray burn or an epithelioma breaking down under treatment.

Technic of Calculus Diagnosis.—Dr. Russell H. Boggs, of Pittsburg, emphasized the necessity of being familiar with the densities that may appear on the plate and being able to interpret them correctly. In over 200 cases examined there were only two unsatisfactory results. The diagnosis from the plate should never be attempted until the plate is perfectly dry. He said that it is not difficult to make a radiograph that will show the calcium oxalate and phosphatic calculi, but if the patient is large, it requires a great deal of accuracy to show the necessary detail and make a correct diagnosis. The Roentgen ray is the most efficient means for diagnosing kidney stones, but experience is necessary in the use of the method to make it valuable. Two radiographs should be taken, and the shorter the exposure the better, because there is then no motion of the parts. When the rays are intense enough to make a picture in less than thirty or forty seconds, and the tube used is so much lower in vacuum, it will give greater detail and differentiation. The radiograph should be made while the patient holds his breath, using a large amount of current with all the inverse discharge cut out. By using a rheostat in series with the primary of the induction coil, the milliamperage can be kept at a certain point. The bowels are emptied thoroughly first and no food or fluid is allowed for some time before the examination. The tube is placed about two inches from the plate.

Dr. Henry Pancoast, of Philadelphia, called attention to two sources of error in diagnosing kidney or ureteral calculi. First, a deposit of salol in the bowel and the presence of phleboliths in the pelvic veins, both of which give shadows resembling those thrown by calculi.

Dr. J. F. Smith, of Chicago, said that calcareous lymph glands and calcareous deposits in the pelvic ligaments have also been known to complicate the diagnosis of calculi.

Dr. Henry Hulst, of Grand Rapids, Mich., mentioned a case in which a fracture of the transverse process of one of the lumbar vertebrae gave a shadow that was at first mistaken for a calculus until a full history of the injury that caused the fracture was obtained.

Dr. M. K. Kassabian, of Philadelphia, cautioned against mistaking calcified lymph glands around the lower portion of the ureter for calculi. He advised inflating the urinary bladder slowly as an aid to diagnosing stones in the lower ureter.

Dr. Charles Lester Leonard, of Philadelphia, said that when there is a stone in the ureter there is always a passive enlargement of the kidney. That fact is an aid in making a diagnosis of stone in the ureter.

Dr. Sinclair Tousey, of New York, cited a case to illustrate that sometimes the stone is on the side opposite to the one indicated by the clinical symptoms as containing the stone. In such cases the Roentgen ray is of great value in locating the stone. Radiographs for stone should include both kidneys and ureters in order to make such mistakes impossible.

Treatment of Lupus and Rodent Ulcers.—Dr. G. P. Girdwood, of Montreal, cited cases of tuberculous lupus in various stages and of varying duration, one case having existed for thirty-two years. All had been treated surgically and by applications, but without avail. All have been cured by the Roentgen ray, or relieved to such an extent that a cure is almost certain in a comparatively short time. Where dermatitis was produced, healing went on more rapidly than in cases not burned, and it continued to go on without any further treatment. All his cases were treated at a distance of ten inches and for ten minutes at a time. The number of interruptions to the current was about three thousand per minute. The coils used were of the 18- and 30-inch variety; 110 to 220 V.; two to six A.; mechanic electrolytic break; no condenser, in most of the cases; 440-660 Watts.

Treatment of Non-Malignant and Non-Tuberculous Skin Lesions.—Dr. W. S. Newcomet, of Philadelphia, cited cases to show that in most cases of this kind the Roentgen ray is beneficial.

Pathological and Physiological Effects of Roentgen Rays.—Dr. J. Rudis-Jicinsky, of Cedar Rapids, exposed guinea-pigs and rabbits to intense radiation daily, first for ten seconds, and later for ten minutes, with a tube distance of six inches or less. After twenty exposures the guinea-pigs partly lost their hair, and after thirty-four exposures there were two cases of very bad necrobiosis, the condition being aggravated when a very low tube was used, backed by a spark gap of four inches and a very strong current. The longer the procedure was carried out, the lower became the resistance of the animals. Autopsy was done on two animals, and the findings were described at length. There was degeneration in the posterior horns and tracts of the spinal cord gray matter; hemorrhages in the cord; fibrous hyperplasia in the skin and the walls of blood-vessels. Usually after a few exposures, even when the skin is intact, there is found a more or less profuse exudate of a clear, lemon-yellow fluid of a specific gravity of about 1.060, distinctly alkaline in reaction, which crystallizes readily on exposure to the air, and when injected subcutaneously into mice, this fluid invariably produces death within forty-eight hours. It irritates healthy skin, acting as a caustic. With the diminution of this fluid, the healing process begins.

Dr. Geo. E. Pfahler, of Philadelphia, exhibited an X-ray filter consisting of a disk of sole leather about six inches in diameter and four times the thickness of the skin. A piece of pure silver may also be used. This disk is placed directly over the opening in the diaphragm. It effectually prevents tanning or burning of the skin. The leather disk is soaked in water before being used so as to resemble skin as closely as possible. Dr. Henry Hulst uses tinfoil, aluminum or some other substance for a filter, selecting the substance to be used with reference to the effect he desires to obtain. Dr. Geo. H. Stover, of Denver, uses aluminum foil. Dr. F. F. Strong, of Boston, neutralizes the superficial effect of the Roentgen ray

by exciting the Crookes' tube by means of Tesla's high-frequency currents, ionizing the area in the vicinity to be treated. Since he has been using this method he has been able to treat deep-seated tumors effectively without producing a burn. He also demonstrated a unipolar Roentgen ray tube to be used for treating lesions situated on the walls of cavities and for treating the center of tumors.

Officers.—The following officers were elected for the ensuing year: President, Henry Hulst, Grand Rapids, Mich.; Vice-Presidents, Russell H. Boggs, Pittsburg; C. E. Skinner, New Haven, Conn.; E. G. Williams, Richmond, Va., and E. W. Caldwell, New York; Secretary, Geo. C. Johnston, Pittsburg; Treasurer, L. E. Custer, Dayton, O.; Executive Committee, K. Dunham, Cincinnati; P. M. Hickey, Detroit, and J. F. Smith, Chicago.

Chicago was selected as the next place of meeting.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON SURGERY.

Stated Meeting, held October 6, 1905.

Suppurating Mesenteric Cyst, Sinus Six Months after Operation.—Dr. C. A. McWilliams reported the history of a case in which he had, at operation, discovered a large cyst of the relatively rare mesenteric type. The character of the pathological lesions were such that it necessitated an unusually long incision. This favored sinus formation.

Mesenteric and Enteric Cysts, with a Report of a Case of Enteric Cyst.—Dr. James C. Ayer read a minutely detailed paper dealing with the pathology, etiology and treatment of these rare lesions.

Dr. Charles N. Dowd, in discussing this paper, said that cysts have two kinds of interest, a pathological and a diagnostic. Cysts, the type of those which had been discussed by the previous speakers were, in his opinion, rarely diagnosed before operation. They were, however, he said, of sufficient frequency to make them justly enter into questions of differential diagnosis. The etiology, he said, was extremely interesting. Embryonic cysts—by far the most common form—follow the structure of the organs from which they spring with remarkable precision. Dermoids he considered undoubtedly to be of the same origin. He had recently removed an embryonic cyst which had reached from the ribs to the pelvis, pushing the descending colon to the median line.

Dr. W. S. Bickham called attention to the fact that in these rare, but nevertheless reasonably common cases there might be a sudden fatal termination occurring in a patient heretofore considered perfectly well. He gave the history of a man weighing about three hundred pounds in whom there developed suddenly a terrific abdominal pain with almost immediate loss of consciousness. The stature of the patient made physical examination practically negative, and no tumor could be felt in the abdomen. Nevertheless, acting on the inference that abdominal pains, of the severity exhibited by the patient prior to losing consciousness, must have been caused by some gross abdominal lesion, he prepared to operate immediately. Before the operation could be begun, however, the patient expired. On autopsy, a small cyst, about the size of an orange, was found. It connected with the small intestine by an opening which admitted several fingers and which evidently was of long standing.

Dr. Knight, of Hartford, recited the history of a case of mesenteric cyst which had recently occurred

in his consulting practice. The patient was a boy, aged thirteen years, who had for many years complained of stomachache. Upon the occasion of Dr. Knight's visit, the temperature was normal, but the pulse was high. Upon operation, a cyst, 3 x 4½ inches in size, was discovered attached to the mesentery. There were no adhesions, but a volvulus had occurred proximal to the sac. During the act of untwisting the volvulus, the patient died. There was some ground for believing that the immediate cause of death was fecal vomiting. The specific gravity of the cystic fluid was 10.60. There was no patent connection with the gut. The walls of the cyst were lined with non-ciliated epithelium. Dr. Samuel Lloyd reported a case of a similar nature.

Hernia in Children.—Dr. Edward W. Peterson said that it was generally agreed in the text-books that, except under particular conditions of stress, children under the age of five should not be operated upon for radical cure of hernia; but until that age should be treated by a truss. Lloyd and others, he said, had given much attention to the subject and had become convinced, as a result of their studies, that a large proportion of the hernias treated and nominally cured by the use of supports recurred. This became a matter for serious consideration when one considered that 40 per cent. of all hernia had been shown to occur in children under the age of fourteen years.

Pathology of Hernia.—The author considered that malformation was the essential cause of all forms of hernia, and believed that in time it would be as generally ascribed to a developmental failure as to-day is the case in such lesions as hare-lip or hypospadias. In his opinion the factor of strain was simply the exciting cause. In doing the Bassini, which was the operation of choice in the clinic where his work was done, the speaker said that two points were considered essential: the first of these consisted in splitting the external oblique as high as possible above the pubes, so that, on suturing the wound, there might be an overlapping of the lines; and second, that inasmuch as Lloyd and others had shown that recurrence always took place at the lower end of the wound, special pains should be made to make that region as tight as possible. He closed the paper by stating that he considered it definitely proven that the curability of hernia by operation was assured, regardless entirely of the age of the patient.

Dr. C. N. Dowd, in discussing this paper, said that he regarded it as a very important subject. There was, he said, a small, but indisputable percentage of deaths which was directly ascribable to the operation for hernia. It seemed to him, therefore, wise to weigh the social standing and intelligence of the parents. If these were willing and able to give proper attention and care to the child, they should be given an opportunity to bestow such care before an operation, fraught as it was, with a small but definite death rate, was advised.

Dr. A. V. Moschcowitz said that he had for many years agreed very cordially with the views of the reader of the paper as to the desirability for early operation in children. Recently, however, he had the misfortune to have a hernia develop in one of his own children, and he had not as yet decided to operate. He took exceptions to the statement made by Dr. Peterson that recurrence was at the inner angle of the wound, because he believed very good authority to exist that a very large portion of recurrences were to be found at the outer angle.

Dr. Lloyd said that he considered it established beyond peradventure that recurring hernia escaped at the inner angle. This he considered to be due in all probability to the difficulty of inserting the most internal deep stitch.

Subcutaneous Pelvio-Ureteral Inflammation in Lieu of Ureterectomy after Nephrectomy.—Dr. A. E. Gallant read a short paper with this title. He said that it was much more practical to implant the ureter just beneath the skin rather than below the fascia in all cases where the kidney had been removed and the ureter was blocked in the lower part of its course. In case of cyst formation taking place, this condition was very easily met by the plunging of a knife through the bulging skin. Formerly the evacuation of any accumulated fluids had been attended by considerable difficulty.

CHICAGO ORTHOPEDIC SOCIETY, AND CHICAGO MEDICAL SOCIETY.

Joint Meeting, held May 3, 1905.

John Ridlon, M.D., President of the Chicago Orthopedic Society, in the Chair.

Charcot's Joint.—Dr. M. L. Harris exhibited a patient, thirty-eight years of age, who presents gastric crises, sharp pains in the legs, and ataxia. Upon examination the Argyll-Robertson pupil is found, loss of the tendon reflexes, and areas of hyperesthesia in various parts of the body—a typical case of tabes associated with tabetic or Charcot's joint. Cases of Charcot's joint are comparatively common. He has no pain in this joint. He has been able to move around with this joint, notwithstanding the extensive changes that have taken place, and, were it not for his ataxia, he would still be able to get around, so far as his joint is concerned.

Tuberculosis of the Knee-Joint.—Dr. Jacob Frank exhibited three patients, and said: The three cases which I present this evening illustrate the results that may be obtained in treating a pathologic condition affecting the same part of the human anatomy and caused by the same germ—the *Bacillus tuberculosis*. These three cases have undergone various methods of treatment, depending upon the requirements or indications of each individual case.

Case I.—R., female, aged twenty-nine years, tuberculous family history. She began to complain of pain between the age of eight and nine years. Twelve years ago, when she first consulted me, her left knee was very large and painful; her general condition was very bad. From the appearance of her knee, I thought that she would lose her limb. I decided, however, to try conservative treatment first, which is my rule in all these cases. Her knee was injected with a ten per cent. iodoform-olive oil emulsion, covering a period of two years. The first six months the injections were made every two weeks, and the remainder of the time every four or five weeks. The first injections caused a violent reaction accompanied by pain, and a temperature of 103° F., which necessitated the patient's staying in bed for a week. Three months after beginning the injections the reaction was very slight, and one day in bed sufficed. When the injection was begun the knee measured 24½ inches in circumference. Before the first injection was made a saucerful of fluid was withdrawn from the joint; the second time less fluid was withdrawn. The subsequent injections were not preceded by the withdrawal of any fluid. Although the injections were

continued for a period of two years, signs of improvement obtained after few injections justified my persistency in continuing the treatment. The knee, as you see it this evening, has the same measurement as the normal knee—16 inches in circumference. You see by her walk that she has a useful limb, without much limp, and goes to work daily.

Case II.—Mrs. F., aged thirty-nine years; no tuberculosis in the family. Was operated upon three times for bone disease. The first operation was performed twenty years ago in New York City on the right hand; the second thirteen years ago in Essen, Rheinland, on inner side of ankle, which never healed. Six months later was operated upon in Newark, N.J., on the outside of ankle, which healed completely in six weeks. The left knee was injected three times for a painful swelling, once at the County Hospital, and twice by myself, without beneficial result. The knee was immobilized after each injection with a plaster-of-Paris cast. After removal of last cast, the knee was still painful and swollen.

Operation, December, 1903. A longitudinal incision to the inner side of the joint. The inner tibial tuberosity contained a tuberculous, broken-down focus. The femoral condyle on the same side was also diseased, and contained a tuberculous focus. The diseased bone, with the soft parts, was removed wherever there were any signs of disease. Iodoform-olive oil emulsion, 10 per cent., was injected in different parts of the joint. The cavities were packed with iodoform gauze. The dependent parts were drained with gutta percha tissue. The knee was immobilized with a posterior splint and dressed daily. Packing was removed in five days. In January, 1905, a swelling of the right knee was noticed. During my absence Dr. Feingold treated the knee by removing the fluid and injecting the joint with a 10 per cent. iodoform emulsion. A plaster cast was applied, which was left on for three weeks. The result was excellent.

Case III.—L. M., female, aged ten years. According to patient's statement, negative, so far as tuberculosis was concerned. Previous disease, none. Present illness started with pain in left knee two and a half years ago. The pain was felt in the morning and absent during rest of day. Three or four months later the pain was felt during the entire day, and some swelling of knee noticed. The first physician diagnosed the case as rheumatism. The next physician who saw her, four months after the onset, January 1, 1902, made a diagnosis of tuberculosis and immobilized the knee with a plaster cast, which was left on for four weeks. When the cast was removed, she walked without difficulty for six weeks, when the knee started to swell, the swelling being much larger this time. May, 1902, eight months after the onset, she was taken to Wesley Hospital. The swelling at this time was quite large and very painful. She had night-sweats, fever, and anorexia. The surgeon, who treated the case there, immobilized the knee in a plaster-of-Paris cast, which remained on for two weeks, and cast two, which remained on for three weeks. When the second cast was removed, a brace extending from the hip to the foot was employed. The brace was worn off and on, according to the doctor's directions, until October, 1903, when it had to be discarded on account of severe pain and swelling, which was getting worse.

Patient consulted me January 14, 1904. The left knee was three times larger than the right, and painful. The swelling extended from about three inches below the knee to the upper one-third of femur, was fluctuating, tibia movable and easily displaced. Operation January 15, 1904. A horseshoe incision was made,

flap dissected up, and condyles of femur, head of tibia, patella and entire joint destroyed by the disease. A large amount of pus was evacuated, which undermined the anterior muscles of the thigh, which were already necrotic. The condyles of femur and head of tibia were amputated, patella removed, including about five inches of quadriceps extensor muscles. The entire capsule was dissected away. The bones were not wired. The skin flap was partially closed; extensive drainage, consisting of rubber tubing and gutta percha tissue, was employed. A bracketed plaster-of-Paris splint, re-enforced by a posterior wooden splint, was used, leaving out the knee and points of the drainage exits, to facilitate the frequent changing of the dressings. The wound was dressed twice daily, irrigated, and iodoform emulsion injected through the drainage opening. The stitches were removed at the end of the first week; the tubing replaced by gutta percha tissue in ten days; all of the drainage was out in fourteen days. The patient left the hospital four weeks after operation. Good union was obtained. She wore a light plaster cast for six weeks after leaving the hospital. Her temperature was between 99° and 102° F. for the first week, and was then normal.

It will be observed, from the brief histories of the three cases, that each individual case was benefited by a different line of treatment. The ten per cent. iodoform-olive-oil emulsion, used in case one with good results, failed in case two, where operative interference remained as the only resort. In this case resection of one condyle and tibial tuberosity was essential. In case three complete resection of the knee, including the removal of the patella, part of the quadriceps extensor muscles and the capsule of the joint was necessary.

Tuberculosis of the Knee-Joint.—Dr. L. L. McArthur presented a case of an Italian laborer, twenty-four years of age, single, well-nourished, who was admitted to St. Luke's Hospital on February 13 of this year, complaining of swelling of the left knee, with stiffness of that joint, slight pain in the joint, and tenderness. The history, briefly, was that he fell, striking on the knee, twenty-six months prior to his admission. Since then the knee-joint has been at times tender and swollen, but the patient has been able to work. The swelling has gradually increased. No other joints were ever affected. His previous history is "that he had never been sick," and he did not look as if he had been at the time of his admission to the hospital. He denied any venereal history, and all stigmata of the same were absent.

Examination of the patient was negative, except for the inguinal glands, which were enlarged. The left knee was swollen or distended with fluid, the swelling was somewhat spindle-shaped, extending from about three inches above the patella to an inch below the knee-joint, with some tenderness on the inner side of the joint. The swelling had a boggy feel, was irregular, there were movable small masses. Soft fringes of synovial membrane or rice bodies could be felt with the knee partly flexed, and the tissues pressed over the outer margins of the articular condylar edges. There was no marked atrophy of the muscles below the knee-joint. Two days after his admission to the hospital, six drams of viscid fluid was withdrawn and sent to the laboratory. The laboratory report regarding this fluid was negative. There were no gonococci, no tubercle bacilli seen. The patient was admitted to the hospital under the service of a colleague, and was later transferred to Dr. McArthur. At the end of that month, February, he was put to bed, given iodide of potassium and inunctions over the knee, and partial

immobilization of the joint. After some days there was a slight decrease in tension and in the swelling. The first of March he came into my service, when a careful examination of the joint was made. I found the joint unassociated with increased heat, unassociated with redness, unassociated with marked tenderness on palpation, but some pain elicited on attempting to make motion. There was considerable fluid in the joint, which produced distinct fluctuating tumors on each side of the quadriceps tendon. Inasmuch as there was a laborer to deal with, only twenty-four years of age, and otherwise physically well, but financially poor, it became necessary to decide whether surgical intervention or long-continued fixation treatment should be instituted after a definite diagnosis had been made. As to the question of diagnosis, the joint presenting the conditions such as have been described, I will say we had to reason from the probabilities in the case, by exclusion, not jumping at the diagnosis. We could reasonably exclude rheumatism, malarial infection, syphilis, and the ordinary traumatic affections of the joint from the nervous side, and had necessarily to fall back on the probability of a tuberculous joint. This diagnosis seemed more probable because of the definite rice-like bodies that could be made to slip over the margins of the articular ends of the femur, outside and inside of the patella, when the knee was flexed at right angles. But to be as sure as possible, and act in accordance with the light we had, the fluid was withdrawn, cultures carefully made, as well as careful inoculations made in guinea-pigs with smears, and yet all the pathological findings were negative. Examination of the fluid was made by competent men, also an examination of a small lymphatic gland that developed in the inguinal region of the guinea-pig that was injected was made by Professor Zeit, and found absolutely negative. The guinea-pig was still alive nine weeks after the injection, and yet, with all the laboratory knowledge exhausted, Dr. McArthur was still convinced he had to deal with a tuberculous joint in a man, twenty-four years of age, a laboring man, who had only enough money saved up to pay for his hospital expenses for eight or nine weeks. This question was presented to him: You have either to have this joint excised, as it is tuberculous, or you have to count on a treatment of two years' duration, at the end of which time you may then have to undergo the same operation. Have you enough money to lay off for that length of time, or are you willing to take that time to get well? He said he could only pay the hospital for eight or nine weeks, and that he wanted to get well as soon as he could. Under the circumstances he thought he would rather have the joint excised. He was told that he would probably get well after the operation, with a stiff joint, with which he would be able to get around.

Dr. McArthur exhibited under the microscope some sections which he thinks will prove of interest to those who have not examined such sections of these little rice bodies, and of the papillomatous-like projections from the inner surface of the synovial membrane, in each one of which can be seen three or four or five giant cells with the characteristic arrangement of the nuclei around the margin, probably containing tubercle bacilli when stained for them, so that we have a microscopical demonstration, as the result of operation, that it was tuberculosis, in a man who was without any previous history of disease, who was well-nourished, and who received a slight trauma. He now presents himself to you with a stiff limb, but the limb is in a good position for use, and primary union has taken place. The limb is not absolutely straight, as it was

considered desirable to have a small amount of flexion, but a firm union. It is now fifty-seven days since the operation was performed. In these cases there are several practical points to consider: First, is the patient able to go through that long course of treatment which is necessary if we are going to treat him by fixation? Second, is the patient at the end of that time to be promised that he will not have to undergo operation? Is he not better off by a prompt resection, prompt fixation, and in a condition ready to go to work again? The argument might be used in this particular case that iodoform injections might have been made, and successive injections made, at the end of which time he might have had a limb of normal length and of normal flexion, but one must consider not only the practical condition of the patient, but the economic side of the equation.

Extracapsular Lipoma of the Pretibial Triangle of the Knee.—Dr. Edwin W. Ryerson read a paper with this title, and spoke of the existence of a triangular space between the patellar ligament, top of tibia, and capsule of knee-joint. This space is normally filled with loose fat, which by trauma or inflammation may hypertrophy and limit the motions of the joint. The differential diagnosis is made by the absence of fever, and suppuration, long duration, painlessness in the early stages, extent and character of the swelling. For its removal operation is necessary. He discussed the after-treatment.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, held June 12, 1905.

The Vice-President, R. E. Van Gieson, M.D., in the Chair.

DISCUSSION ON THE TREATMENT OF HYPERTROPHY OF THE PROSTATE.

The Radical Relief of Urinary Obstruction Due to Prostatic Hypertrophy.—The discussion was opened by Dr. Lewis Stephen Pilcher in a paper with this title. The question of the hour in this condition, he said, was not catheterism, or electro-caustic incision, but absolute complete removal of the obstructing masses. In 1851, Dr. S. D. Gross had expressed the opinion that the idea of total extirpation was too absurd to be seriously entertained; yet, since the year 1890, this operation had been done in thousands of instances, and the accumulated experience of these cases had demonstrated the following facts: (1) That the removal of the whole or the greater part of an enlarged prostate is a feasible and reasonably safe procedure. (2) That, with rare exceptions, complete healing of the operative wounds takes place, without permanent fistula or stricture. (3) That in the majority of cases, normal power to retain and to void urine is regained. (4) That these results have followed different methods of operative technic. (5) That the degenerations incident to advanced years, and the presence of pre-existing disease of the urinary tract, as well as the exhaustion resulting from long suffering, loss of sleep, and the absorption of septic products, previous to operation, add in many instances a special gravity to operative interference in such cases, and entail a certain hazard of mortality even in the hands of the most experienced, whatever the special method employed. This mortality may at present be estimated at from 5 to 10 per cent. (6) That, as the result of the special con-

ditions presented by particular cases, certain disabilities, more or less pronounced and continued, are not infrequent accompaniments or sequelæ of these operations. These, in the order of their frequency, are (a) sexual impotence, (b) epididymitis and orchitis, (c) partial urinary incontinence, (d) fistulæ. Nevertheless, even with these drawbacks, the fulfilment of the supreme indication, namely, the removal of the urinary obstruction, suffices to obscure the presence of lesser evils. In the great majority of cases subjected to total prostatectomy, the ability to empty the bladder spontaneously has been restored and permanently maintained, while the quality of the urine has become fairly normal. Coincidentally, the general health has greatly improved. In a very large proportion of the remaining cases a marked lessening of the obstructive symptoms has resulted, the intensity of the cystitis has diminished, the frequency with which a catheter is required has been lessened, and the facility of its introduction has been increased.

The Choice of Method.—The choice of method must depend upon a full comprehension and weighing of the nature of the prostate and the readiness with which it yields to operative attack, of the anatomical relations which environ it and make it more or less accessible, and of the necessities for after-treatment, whereby postoperative dangers may be guarded against and ultimate perfection of cure secured. At the present time three methods present themselves: (1) Through the bladder by means of a suprapubic section; (2) by the perineum through a limited longitudinal median incision carried into the capsule of the prostate. In both of these enucleation of prostatic masses is effected by finger-tip dissection unaided by sight. (3) By the perineum through a free, transversely curved incision, through which the prostate is fully exposed, followed by systematic incision into its substance, and subsequent enucleation largely under the guidance of the eye. In the first two methods the amount of time required, in favorable cases, is distinctly less, and it is conceivable that in some instances this indication of quickness of execution may determine the choice. Cases characterized by massive gland hypertrophy are the most favorable for the transvesical method; those in which the hypertrophy is moderate, for one of the perineal methods. Those in which there is a marked fibrotic element always require for their satisfactory management recourse to the most open method of attack possible. Cases with massive intravesical growth in which the use of a general anesthetic is contraindicated, but in which operation may still be justifiable under spinal cocainization, may be better attacked through the bladder. A hard, fibrotic prostate should not be subjected to any form of prostatectomy under such conditions. The variety of the hypertrophy present should always be taken into consideration. The prostate is complex in its structure, and it is more correct to speak of it as the prostatic body, rather than as the prostatic gland. We may have glandular, muscular or fibrous hypertrophy predominating, and, according to the ease or difficulty with which enucleation from the capsule can be accomplished, this, that, or the other procedure should be selected.

Dr. Pilcher is of the opinion that, as a rule, for the best fulfilment of all the operative indications, there is necessary the free exposure of the gland by suitable perineal incision; the exposed gland

should be brought down as much as possible into the superficial operative field by the use of suitable tractors, and the removal of the obstructing masses should be carefully and systematically effected under the guidance of the eye as much as possible.

Technic of the Pilcher Perineal Operation.—He then proceeded to give the technic of the operation as he was accustomed to perform it. The successive steps, which were illustrated by a series of large photographs taken during the operation, were as follows: (1) Placing the patient in position; (2) the primary incision, transversely curved; (3) division of the recto-urethral muscle; (4) exposure of the prostate; (5) downward traction of the prostate, by means of Young's tractor; (6) enucleation of the hypertrophied masses; (7) insertion of bladder-drain and closure of the wound. Dr. Pilcher has employed this procedure in 28 out of 30 operations which he has done since September, 1902. In one of the other two a restricted median perineal section was made, and the enucleation conducted by the sense of touch alone. In the other the suprapubic transvesical method was employed. Four of his patients died as the result of the operation.

Perineal Prostatectomy by an Original Technic.

—Dr. Parker Syms said that the treatment of prostatic hypertrophy had ceased to be a question of palliation. Radical procedures were now acknowledged to be the only rational means of relief, and the removal of the masses causing obstruction, if not the entire gland, was called for. In his opinion the perineal operation was the proper one in all cases. It was safer than others, and involved less danger to the patient. It was important to abbreviate the operative technic as much, and to cause as little loss of blood, as possible. Therefore, he advocated the median incision. He believed it gave all the exposure that was obtainable in that region, on account of the anatomical relations of the parts, and if the rectum was to be left intact, the field of operation must necessarily be limited in the great majority of cases. He then proceeded to explain his special technic, illustrating his remarks by means of diagrams. The patient is placed in the exaggerated lithotomy position, a lithotomy staff is passed into the bladder, the membranous urethra is opened on the staff, and the entire incision consists in one straight cut in the median line. Exposure of the prostatic sheath, not the prostatic capsule, is accomplished by simply pushing away the soft parts, including the rectum. The finger is then introduced into the prostatic urethra, dilating it, and afterwards, the Syms tractor. This consists of a rubber bag at the end of a rubber stem, into which a stilette is passed. It enters the bladder very readily, after which it is dilated with a definite quantity of water; thus making elastic pressure from within the bladder. One special advantage of this tractor is that it serves to check the oozing after one lobe of the prostate has been enucleated and the surgeon is working on the remaining portion of the gland. The enucleation is accomplished without the aid of the sight. The entire operation, including enucleation, the treatment of the bladder and the packing of the wound, can be completed within fifteen or twenty minutes. The iodoform gauze packing is removed after 24 hours, the drainage tube after 48, and the patients, who sometimes get up in 48 hours, are not often confined to bed for more than four days. As in all open operations, the healing is rather slow, but this is completed

in from five to eight weeks. Sounds are used after the operation.

Dr. Syms said he believed that this was the simplest operation in use to-day, with perhaps the exception of that of Goodfellow, of San Francisco, who used no tractor whatever, and whose operation was practically the one proposed by Gouley in 1874. As to results, 4 cases died in about 60 operated on. The condition of the patients who recovered was, in the main, very satisfactory. All such patients were, of course, liable to a recurrence of cystitis unless great care was employed. Dr. Young had laid great stress on the preservation of the sexual function, and with a view to this he operated in such a way as to leave a bridge of tissue (which was nothing but a piece of fascia) for the protection of the ejaculatory ducts. His own impression was that, in a certain proportion of cases, the sexual function would inevitably be lost. On the other hand, some patients who had lost the function regained it after operation. The majority were left impotent, or at least sterile.

While Dr. Pilcher's method is an ideal one, other procedures are called for in exceptional instances, and Dr. Carl Beck considered Dr. Pilcher's an ideal method. At the same time, he did not think other procedures were to be altogether excluded. As a general surgeon he was not inclined to look with special favor upon the Bottini operation, yet there were certain cases in which he believed it was preferable to this ideal method. Success was sometimes a matter of personal technical skill; so that some surgeons would get the best results with one method, and others with another. For himself, he did not think that he could do a Bottini operation as skillfully as some others. He had done all these operations, including castration, which had now been practically abandoned, and with a fair amount of success. The operation of ligation of the iliac arteries, however, he had never performed. To sum up, he would say that in all cases where the condition of the patient permitted, he would do the Pilcher operation. In exceptional instances he would think it best to resort to the Bottini operation, castration, or other procedure.

Operation Preferable to Catheterization.—Dr. Willy Meyer said that a great many surgeons advised the use of the catheter as soon as there was residual urine. This, he believed, was a mistake, as he thought operation should be advised instead. In the end, operation was safer than catheterization. In exceptional instances the latter might be permitted, but the average patient could not safely be instructed in the use of the catheter.

Experience with Different Operations.—In 1897 he began performing the Bottini operation, and with a view to conclusively determining its merits he decided to continue using it for five years. Between 1897 and 1902 he performed it 59 times, and with fairly satisfactory results. In the meanwhile great advances had been made in prostatic surgery. Since October, 1902, he had done 41 operations: 9 perineal, 24 suprapubic, and 8 Bottini. Every one of these procedures he believed had a distinct place in the surgery of the prostate. The suprapubic operation of McGill, as modified by Fuller, was an excellent one. Were it not for the increased leakage liable to result from it, he thought it would, as a rule, be preferable to the perineal operation. If properly performed, it was just as safe as the latter. It had been claimed that it required special

strength on the part of the surgeon. This was not the case, however, as it was a matter depending entirely on the manner in which it was done. Personally, he was in the habit of changing his hands after the proper cleavage had been found. If a cutting operation was not permissible, the use of the catheter was generally advised, but as a rule he thought the Bottini operation preferable. By means of it a cure could be effected, so far as a cure was possible from surgery. To claim that this procedure had no place in surgery he thought was absurd. The preservation of the "ejaculatory bridge" of Young did not mean the saving of the potency of the patient. So far as this was concerned, the suprapubic operation afforded a better chance, and before we operate the patient should always be informed of this fact.

Dr. Eugene Fuller said that he had performed the modified McGill suprapubic operation about 250 times, and with a mortality fully as low as that of others. At the same time, he was not blind to the merits of other procedures. In a fairly large minority of cases he considered the perineal operation preferable, and he had employed it in nearly 80 cases. He did not believe in too large an incision, and, in the main, followed the method of Good-fellow. He was accustomed to make rather a low incision, and then work up, so as not to injure the gut. In each individual case the surgeon should think out carefully which operation was best suited to the conditions present. The question was not one simply of getting out the prostate. When long drainage was called for in order to get the patient well, the perineal operation was absolutely contraindicated. In malignant cases it was impossible to enucleate, and the greatest amount of care was required. In some instances a combined operation, suprapubic and peritoneal, was advisable. In his work Dr. Fuller said he had educated his fingers, so that in the manipulations required he could trust them to ten times the extent that he could to his eyes. He therefore did not feel the necessity of great exposure, which was accompanied with the danger of leaving a fistula.

Dr. James Pedersen said that his experience had been limited chiefly to the Bottini operation and perineal prostatectomy. In regard to the Bottini operation his feeling coincided with that of Dr. Willy Meyer, and he would urge anyone performing it to follow the rules so well laid down by Dr. Meyer. As to the perineal, he had been really surprised to see how much could be removed by means of this procedure. He had had no experience with Dr. Syms' tractor, and was accustomed to employ Young's metallic tractor. In some cases the masses were so deep-lying that a tractor could not be used. The forceps devised by Young he thought too long for use in the majority of instances, and he preferred the old-fashioned placental forceps.

Importance of the After-Treatment.—He considered the after-treatment of very great importance. There were four points which should especially be looked after in order to secure the greatest measure of success. These were: (1) Short drainage. The tube should be removed early, say, in from twenty-four to forty-eight hours; (2) as short a confinement to bed as possible; (3) free diuresis (by means of plain water); and (4) mild catharsis by means of salines.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

Thirty-first Annual Meeting, held at Indianapolis, Ind., October 10, 11 and 12, 1905.

The President, Bransford Lewis, M.D., of St. Louis, Mo., in the Chair.

Addresses of welcome were delivered by Mayor John W. Holtzmann, on behalf of the city of Indianapolis, and by Dr. W. N. Wishard, on behalf of the local profession, which were responded to by Dr. H. O. Walker, of Detroit.

The scientific work was divided into two sections, medical and surgical.

SURGICAL SECTION.

Surgical Dressing.—Dr. Carl E. Black, of Jacksonville, Ill., presented a preliminary report on the technic of the after-dressing of surgical cases. He pointed out briefly the principal elements necessary for the proper dressing of a wound, whether it be a surgical or an accidental wound. While the technic differed somewhat in different kinds of wounds, the fundamental principles were the same in all. Such a consideration divided itself into (1) the patient; certain modifications must always be made to suit the individual case. (2) Those things which were auxiliary to the dressing itself, but which did not come in contact with the wound. (3) The surgeon or nurse making the dressing and his or her assistant. (4) The instruments, dressings and solutions coming in contact with the wound. Septic wounds should be so dressed that there was no opportunity for a further mixture of infection in the wound, nor any opportunity for the infectious material from the wound to in any way be scattered where it could come in contact with other wounds. These two points should always be the basic principles of a surgical dressing, and should always be kept prominently in mind by those undertaking the dressing of wounds. To facilitate dressings and to economize in materials, and at the same time carry out a thorough technic, the author had arranged and had been using for some time a plan which had proved quite satisfactory. He had devised a box which contained everything that might come in contact with the wound, and everything, excepting the instruments, could be purchased in ordinary stores of towns, and were not expensive. This plan was described in detail.

Dr. John Young Brown, of St. Louis, Mo., thought the secret of the success of the essayist in dressing wounds was due largely to the thorough system he had inaugurated. System was everything in surgery, as in business.

Dr. O. H. Elbrecht, of St. Louis, Mo., said the sooner surgeons reached a standard in the sizes of dressings, in tapes, squares, oblongs, etc., the less confusion there would be on the part of the surgeon in going from one hospital to another to do surgical work. He mentioned the plan adopted by him in the hospital with which he was connected.

Dr. C. E. Ruth, of Keokuk, Iowa, said that the sooner the profession came to a realization of the needs pointed out by the essayist the less confusion there would be, as well as lessening very materially the liability to infection.

Dr. Miles F. Porter, of Fort Wayne, Ind., said the keynote of success in the management of surgical cases was system and simplicity. One should attempt to do away with the necessity of dressing

wounds until they were healed in all cases where this was possible. The essayist spoke of there being no necessity for dressing an aseptic wound until the stitches had been removed. The speaker said there should be no stitches to remove in the ordinary aseptic wound, no matter where it was located, and in the ordinary treatment of septic cases the rule, as it prevails in his judgment, made necessary a great deal more subsequent dressing than was called for. The dressing of a wound after it was made should be looked upon as an evil to be avoided as far as possible. He illustrated this point.

Dr. Black, in closing, said that the gist of the whole matter was system for the purpose of saving time, of safety for the patient, and for the purpose of economy.

Curettage in Septic Cases.—Dr. C. E. Ruth, of Keokuk, Iowa, stated that prevention must always be the most important treatment, and must always include hygienic asepsis of the patient and physician, and great care in examination. No instrumentation in any variety of puerperal sepsis should be considered which denuded the uterine mucosa and opened up tissues not in any sense protected from septic infection, the utmost gentleness being used to avoid any possibility of puncturing the softened or disintegrated uterine wall. The curette should never be used in such cases, certainly not a small or sharp one, and then only in the least serious of these cases, namely, saprophytic intoxication, which was not sepsis. He had for many years been satisfied with a placental detacher of his own device, which answered every purpose with a minimum danger of perforation. Streptococci and staphylococci were the most serious of puerperal infections, as these, on the manifestation of symptoms, passed beyond all possible reach of removal by any form of curettage. While curettement could do no good, it might do much harm in disseminating infection and in causing uterine perforation. Within the last two and a half years the author had operated upon four cases of puerperal sepsis which illustrated the dangers of curettage. These cases were reported in detail.

Dr. O. H. Elbrecht, of St. Louis, Mo., thought that many deaths were due to the curette being used in cases of septic uteri. It was just as criminal, in his judgment, to introduce a curette into a septic or infected uterus as it was a sound or curette for the purpose of producing criminal abortion. He mentioned one case in which a physician curetted a uterus contrary to his advice, and the next day the patient died. He mentioned two other cases of sapremia that terminated fatally from what he believed to be curettement of the uterus.

Dr. H. O. Walker, of Detroit, said the paper was timely, and one could not condemn too strongly the indiscriminate use of intrauterine curettes and irrigators. Many deaths were undoubtedly due to the indiscriminate use of these instruments.

Dr. John Young Brown said that while the indiscriminate use of the curette was dangerous, it nevertheless had an important function to fulfil. Where there were decomposing membranes or fragments of retained placenta the uterus should be cleaned out.

Dr. Hannah M. Graham, of Indianapolis, related her experience in treating the class of cases under discussion. She used an applicator, and not a sharp or dull curette. Cotton was wrapped around the applicator, which was saturated with carbolic acid, and the debris left in the uterus was swabbed out.

It was her practice, too, to use a fenestrated catheter as a drainage tube, through which peroxide of hydrogen was injected every two to three hours, either by herself or the nurse, and she had had good success by this method.

Dr. A. M. Hayden, of Evansville, Ind., concurred in the remarks of Dr. Brown. When a physician was called to see a patient whose uterus contained a broken-down fetus or fragments of placenta, if he failed to clean out that uterus he thought he was criminally negligent. Patients went on for weeks with elevation of temperature due to sepsis, and would not get well without the judicious use of the curette, while if the uterus was cleaned out the patients would recover in a short time. He advocated the use of placental forceps for removing debris or pieces of retained placenta without disturbing or breaking down nature's protection.

Dr. Thomas B. Noble, of Indianapolis, uttered a word in defense of the uterine curette, saying it was an instrument for prevention as well as cure. The proper way was to interpret the pathology that one had to contend with, remembering that the curette was a means to an end. If a woman was suffering from high temperature, rapid pulse, prostration, due to saprophytic material in the uterus, which could be removed by mechanical means, the physician did her an injustice if he left the uterus alone, simply trusting to the *vis medicatrix nature* to take care of it.

Dr. G. Frank Lydston, of Chicago, said he did not believe that the essayist nor those who spoke so emphatically in condemnation of the curette would fail, as a matter of practice, to differentiate between the post-abortive septic phenomena met with and the post-puerperal septic phenomena. He did not believe that any of the gentlemen intended to convey the idea that the curette was to be condemned and never to be used. If one were called to see a woman who had been suffering from general sapremia for several weeks, who was in such a condition that it was evident dissolution was not far away if something was not done, if the history was such that material had been left behind in the uterus, and she was having a temperature of 106° F., he would certainly not treat such a woman surgically or provide drainage by way of the vagina through the medium of vaginal irrigation, but would remove the septic material from the uterus. If this were not done the case was doomed, and many women in such a condition recovered under proper intrauterine treatment.

Dr. Ruth, in closing, said he thought a good deal of the discussion arose from a misunderstanding or failure to differentiate between the different varieties of infection that one had to deal with. There was no danger from a careful curettement in a case of putrescent uterus in which there was not added to the intoxication or sapremia a septicemia.

Artificial Hyperemia in Surgery.—Dr. Alexander C. Wiener, of Chicago, pointed out the indications for this treatment in surgery, as follows: (1) Subacute mild inflammations of joints and soft tissues were relieved rapidly. (2) Acute purulent inflammations of soft tissues either on the extremities or the head. (3) Acute and subacute inflammations of joints and purulent arthritis; gonorrheal infection of joints. In these cases the elastic bandage had to be applied in such a manner as produce energetic venous stasis, without causing pain to the sufferer. In acute inflammations comparatively light constrict-

tion produced an immense hyperemia. This conclusively showed that the arterial blood was not diminished, but slackened. Cases were cited in which excellent results were obtained by the Bier method.

Surgery of the Gall-Bladder and Its Ducts.—Dr. H. O. Walker, of Detroit, Mich., related his experience with 185 cases upon which he had operated. He quoted from a former paper written by him years ago, saying that what he said then still obtained to-day. First, jaundice, which heretofore had been regarded as almost pathognomonic of the presence of gall-stones, was present in only about 20 per cent. of all stone cases. Second, that pain in the region of the gall-bladder did not by any means indicate the presence of gall-stones, but was quite as often the result of a kinking of the cystic duct from lesions the result of one or more attacks of cholecystitis combined with pericholecystitis. Third, the passage of stones in the feces was not as common as was formerly supposed, for colics were rarely successful in passing a stone from the gall-bladder. Fourth, empyema of the gall-bladder was not always felt by palpation, for frequent attacks of cholecystitis tended to diminish the size of the gall-bladder. Fifth, tumors of the gall-bladder without pain or jaundice indicated a simple dropsy, while a painful, distended gall-bladder indicated empyema, and when accompanied by jaundice indicated constriction of the choledochus. Sixth, a hard nodular painful tumor of the gall-bladder, with or without jaundice, was almost certain evidence of carcinoma. Seventh, obstruction of the choledochus, accompanied with inflammation and jaundice, quickly disappeared after the passage of the stones into the papilla of the duodenum. Cholelithiasis was of greater frequency than was supposed. Approximately every tenth individual had concretions in the gall-bladder, yet only about one in twenty ever complained of their presence, so that quiet stones needed no treatment. It was only the cholecystitis and cholangitis which made manifest the irritable presence of gall-stones without demanding treatment, namely, medicinal and surgical. The conditions that required operative intervention were (1) an acute seropurulent cholecystitis, and accompanying pericholecystitis. (2) Persistent and frequent pains due to adhesions between the gall-bladder, intestines, stomach and omentum. (3) Chronic obstruction of the common duct. (4) Chronic empyema of the gall-bladder and its accompanying accidents. Cholecystectomy was undoubtedly advisable where the gall-bladder had been subject to frequent attacks of inflammation, and where chronic septic conditions existed. The author reported an interesting case in which he removed the gall-bladder and fixed the right kidney.

Retroperitoneal Teratoma.—Dr. C. M. Nicholson, of St. Louis, Mo., read an interesting paper on this subject.

The tumor described was a teratoma of the abdominal cavity, remarkable not only because of its rare occurrence, rapid growth and total absence of symptoms until three weeks before death, but because with its substance had been found a chorion epithelioma. The following is a report of the author's case: August 5, 1905, he was consulted by C. W., a healthy-looking, well-developed young man, twenty-one years of age, who complained of one symptom, fainting, which had occurred twice during the preceding week. He had attended to his

business until August 4, when he quit work, fearing an accident during his trips as superintendent down in the mine. Upon inspection the abdomen appeared normal; pressure over the region of the gall-bladder enabled the examining finger to outline a pear-shaped body. In the median line beneath the rectus abdominis, extending from a point four inches above the pubes to the lower margin of the right lobe of the liver was an immovable mass of definite form. The line of dulness was continuous between the pear-shaped body and the mass in the median line. Although the growth measured four inches in width, no intestinal disturbance had resulted. Three weeks later patient vomited and complained of great pain after eating. The vomiting became more frequent and the pain more severe with each succeeding day. He saw the patient September 3, and the following morning made an exploratory incision, revealing a growth extending from the right kidney to the last dorsal vertebra, thence downward to within two inches of the pubes. It was firmly attached to the median line posteriorly and to the kidney externally. The posterior peritoneum was cut through and the mass found to be enclosed in a fibrous capsule, which was sewed to the anterior layer of the peritoneum, and a portion of the growth removed. The patient sat up at the end of the first week, but continued to complain of great pain. He died two weeks after the operation. Post-mortem examination was made by his assistant, Dr. S. S. Stahl, whose report in part was as follows: "On opening the cavity of the abdomen and cutting through the posterior peritoneum and fascia transversalis, a fibrous capsule enclosing a semi-solid mass and adherent only in the median line and to the right kidney, was found. Not without difficulty could the tumor be removed, so intimately was it attached to the structure anterior to the vertebral column. The abdominal aorta from the first dorsal vertebra to the fourth lumbar was closely attached to the growth. The gall-bladder was distended, evidently due to pressure on the common duct. Neither the lumbar glands nor the kidneys were enlarged, although the right kidney was adherent to the tumor. The liver, though very slightly enlarged, showed evidence of involvement. The heart and pericardium were normal. The lungs contained two or three hundred nodules." The tumor weighed a little less than two pounds. It was right-angled and lobulated, the lobules being smooth and extending in different directions. On cutting, the tumor was soft, the anterior inferior extremity being partially cystic. Some of the cysts were as large as a hazelnut. The remainder of the growth appeared solid. The outer surface of the tumor was covered with a distinct fibrous capsule. Paraffin section of the Zenker-fixed tissue showed a very complicated mass. Portions of organs were found corresponding in embryonic origin to all the germinal layers. Skin, cutaneous organs, central nervous system, peripheral nerves, represented the epiblast. Mucous glands, tubes, cysts with epithelial lining were indicative of the hypoblast. Bone, cartilage, fibrous tissue constituted the mesoblastic structures. The author considered at length the different theories advanced in the past to account for the origin of teratomata.

Dr. Joseph Rilus Eastman, of Indianapolis, said he had had a remarkable experience in relation to tumors of this character. He had had two cases of complete precoccygeal teratomata, but he had not had such a case as the one related by Dr. Nicholson.

The speaker's cases were simply instances of precoccygeal teratomata; they were not cases of inclusion fetalis, which Dr. Nicholson had reported. In the first there was presented the clinical picture of a complete external fistula in ano. Long hairs protruded from both orifices, but when the roof of the canal was split up it developed that there was quite a cavernous space there which was lined with epithelial membrane, and this proved to be in either case a precoccygeal teratoma or dermoid.

Dr. Nicholson, in closing, stated that chorion epithelioma occurring in a case of retroperitoneal teratoma was extremely rare, and so far as a search of the literature was concerned, he had been unable to find a similar instance. Examination of the microscopical slides demonstrated clearly the presence of tissues from the three germinal layers.

Some of the Fallacies in the Clinical Diagnosis of Gonorrhea.—Dr. G. Frank Lydston, of Chicago, discussed some of the more dangerous of the fallacies in the diagnosis of gonorrhea, with especial reference to prognosis as regards the infectiousness of a given individual to other and healthy persons with whom he or she might come in sexual contact. He considered, first, the possibility of excluding infectiousness in the case of a woman under suspicion, or who was known to have had gonorrhea. That the most dangerous type of infection of the female was that in which the external manifestations of the disease were absent or wanting was coming to be well understood by both gynecological and genito-urinary specialists. The explanation of the relatively great danger of infection of others by such subjects was not so thoroughly understood as it should be. Gonorrheal urethritis in the female, when it had assumed the chronic form, might present no secretion whatever upon external examination. There might be little or no vaginal, cervical or uterine discharge, and even such as there was might upon examination fail to disclose the micro-organisms of gonorrhea. A swab or probe passed into the urethra might return perfectly clean. Notwithstanding this apparent lack of infection in the urethra, the mucous glands might be involved, and under the influence of sexual excitement and the mechanical effect of coitus the physiological hypersecretion might convey to the meatus gonococci in abundance. The result was sufficiently obvious. The author presented clinical facts which would seem to make it impossible for a physician to state in any given case that a woman was free from infection. This was one of the strongest arguments against regulation and medical inspection of prostitutes. He entertained serious objections to the medical profession constituting itself an assurance society for the protection and promulgation of the social evil, but aside from this scruple there remained the fact that no reliable system of inspection or examination could be devised. The author was firmly convinced that in many cases of infection of healthy women by a latent gonorrhea of the husband, mixed infection was responsible, and the resulting pathological condition in the female was non-specific. Its being non-specific, however, did not preclude the possibility of its becoming very serious. The author thought that there were no tests at the present time which would enable the profession to give a positive opinion of the infectiousness of a given case of suspected latent gonorrhea. As already suggested, the clinical history in many cases was more important than the laboratory

study of the case, and a careful combination of both methods of study was always essential. The physician should be as chary of assuming responsibility in advising a gonorrheic in the matter of matrimony as he should be in advising syphilitics under similar circumstances.

Dr. W. E. Washburn, of Kewanee, Ill., exhibited an improved urethrotome.,

(To be Continued.)

BOOK REVIEWS.

A MANUAL OF EXPERIMENTAL PHYSIOLOGY FOR STUDENTS OF MEDICINE. By WINFIELD S. HALL, Ph.D., M.D. (Leipzig), Professor of Physiology, Northwestern University Medical School; Professor of Physiology, Wesley Hospital School for Nurses; Professor of Physiology, Mercy Hospital Training School for Nurses; Lecturer on the Physiology of Exercise, Institute and Training School, Chicago. Lea Brothers & Company, Philadelphia and New York.

THIS little volume of 240 pages will be found a useful and practical laboratory manual for medical students who are preparing for the practice of clinical medicine and surgery. The subject-matter is arranged in two parts, the first taking up experimental general physiology, and the second covering the ground of special physiology in chapters on the circulation of the blood, respiration, normal hematology, digestion and absorption, vision, the physiology of the nervous system and the physiology of the muscular system. The order of these chapters can be shifted by the instructor, so as to correlate with other portions of the medical course if necessary. The arrangement of the book has been guided by the intention to work up from the simple technic of the preliminary chapter on cytology to those subjects involving a greater degree of difficulty in this particular.

THE PREPARATION AND AFTER-TREATMENT OF SECTION CASES. By W. J. STEWART MCKAY, M.B., M.Ch., B.Sc., Senior Surgeon to the Lewisham Hospital for Women and Children, Sydney; Late Surgeon to the Benevolent Asylum Maternity Hospital, Sydney; etc. William Wood & Company, New York.

In this volume Dr. McKay has elected to elucidate a field which to the graduating student, generally speaking, remains an unopened chapter, and to the practising surgeon a source of perplexity and anxiety.

The first 150 pages are devoted to the preparation, equipment and arrangement of a well-appointed operating room, and include appropriate descriptions of the methods of disinfection and sterilization, the preparation of the patient, the duties of the nurses and assistants, the anesthetic and the dressings.

Following this, certain modifications which are of practical utility in office work and home operating are suggested.

The remainder of the book reviews generally the subject of postoperative management, emphasizing the symptomatology of the multitudinous complications and sequelæ to be recognized and the appropriate means of combating them when once manifest.

Viewed collectively, the work not only presents a painstaking compilation of accepted methods and opinions, but also furnishes a wealth of personal detail gained from an extensive surgical association and observation.